

Monte Verde,
Near Isla Pascua,
February 11, 1956

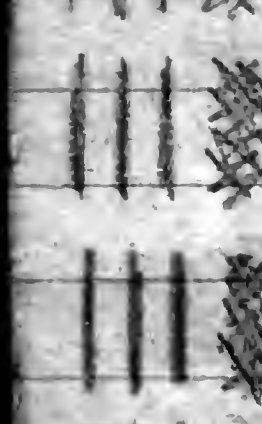
A lot of birds here 11:00 a.m. Mostly in the cliffs of this precipitous island. Obviously breeding some with eggs. At least one with a newly hatched chick. At least one flying immature or juvenile. Some may be still pairing for all I know. All quite tame.

These species seem to have much the same alarm reactions as others. When I walk around the island, and stop for a moment, a few birds will sometimes alight and sit near me. In an "Alarm Posture", very long & slender and usually very oblique. This is usually accompanied by occasional, regular, slow side-to-side head-turning, gait, preening movements (I have only seen preening the breast so far — and this obviously "developed" out of gait), and an occasional rapid side-to-side head-shake.

The best examples of more aggressive behavior I have seen have been shown by birds in little parties, varying in number & composition, moving from place to place along the tops of cliffs near the nesting sites. There is a good deal of fighting in these groups, and almost constant display. I don't know what starts off all this hostility — usually, a few birds land, at a deserted spot or where there are already 2 or 3 birds, and general pandemonium breaks out.

The two commonest patterns in these groups I will call the Long Call (LCW) and Short Call (SCW). Both are obviously related to the LCN-LC complex of gulls.

The LCW is given from O and L postures, and all possible intermediate postures, by birds on the ground, usually facing an opponent more or less directly. It is a long, very harsh, rather undertone, "Ka-a-a-w-ah". Quite reminiscent of some Rasps of the Inca Tern. LCW notes are usually, although not always, uttered in series — but each note of a series is very distinctly separated, by a definite pause, from the notes uttered before and after. The bill is often completely closed, if not briefly, between notes — and it is, at least, half-



most extreme O's of the Grey Gull.
The intermediates between O and L, and the L's themselves,
are quite extreme, again perhaps most reminiscent of the Grey Gull.
All these portures appear "long-round" headed, almost
have an "egg" head-set.

There is usually a definite change of posture between successive SCW notes in a single series; particularly, probably, when these notes are given from O. This is sometimes just an apparent relaxation, a sort of "slumping down" into a sort of unritualized semi-U neck shorter & bill more or less horizontal. Sometimes, however, it appears to be more extreme, a definite U with bill pointed down. Both of these are always strictly correlated in time, and neither is ever really very long. The latter

all three postures appear "long-round" headed, & almost have an "egg" head-set.

Both of them are always
with the bill-closing
— long the latter

cases might conceivably, be related to some form of nodding.

Both LCW and SCW are frequently given in flight. A flying bird giving LCW merely tilts its neck forward, possibly doesn't even do that, and gives the call, apparently with the same body movements as on the ground. Continues flying or gliding, whichever it was doing before it began. Thus the accompanying movements and postures are obviously unritualized. A flying bird giving SCW usually does a little more, but seldom much more. Not infrequently tilts its neck upward as well as forward, in a sort of semi-Doff. Even this doesn't appear to be ritualized. I haven't noticed any accompanying ritualized movements.

The main causal differences between LCW and SCW are fairly clear. SCW often precedes attack on another bird on the ground. It is also frequently given by the pursuer during the relatively few, brief, unritualized, turning-and-turning, pursuit flights I have seen. It is obviously very aggressive. I haven't noticed many attacks delivered from LCW. It appears to be less aggressive. It is probably also lower intensity in many cases at least. It is very noticeable that many birds give a burst of SCW (up to 9 or 10 notes in the longest cases I have seen) and then give a few LCW notes — apparently "calming down". LCW notes are the usual notes given by birds flying near nesting sites, and by birds coming in to land. The whole circumstances of the LCW, in fact, are very reminiscent of the LCW of other species. There may be a slight tendency for birds flying near me to give SCW instead of LCW, but I am not sure about this. The whole circumstances of the SCW, in fact, are very reminiscent of the Chk and Gkk of other species.

It is perhaps surprising, therefore, that it is the LCW that is most similar, physically, to the "Attack Call" of birds attacking a potential predator, (i.e. me). Such birds swoop toward me, and soar away. Quite extreme, but not necessarily ritualized; certainly very high motivation. Swoops flying, soars gliding (at least until the end, when flying may begin again). But I shouldn't be at all surprised if this varied a little with the individual — it

stolidus, Feb. 11, 1956 I

(541)

doesn't look very "rigid". Swamps back after give a call, very difficult to hear. The "tike" note is a very "up" note.

The last part of the note is very much like a "tike" note. The whole thing is quite reminiscent of the Attack Call of many other species. The note is always very harsh, and of course, with a rattle undertone. (All the calls of this species seem to have the undertone.)

Some attack swamps are silent except for the "tike"-like "Attack Syllable" at the end.

Some swamps are completely silent.

All the Loars I have seen were completely silent.

A slight correction. I have been walking again to the nests I can reach on foot, and was swamped at, etc. again. But this time I noticed that some of the swamps were accompanied by pure LCW notes (LCWN). And many of the birds circling around me (this species circles just like other Larks - I didn't notice any pronounced up-and-down effect) also uttered pure LCWN's.

All this latter would suggest that the LCW can be very high intensity at times, and quite aggressive. Perhaps the motivation of some LCWN's, (at least without any terminal "tike"-like syllable), is comparable to the PCC notes of Franklin's Gull.

There appears to be some form of pure Rattle. I have heard it in the little mobile fighting groups on top of the cliffs. Apparently given with bill closed or almost closed, and I am not exactly sure which birds were giving it. I think, however, that it too is obviously related to the LCW notes, and it may well be given from an L posture or a posture intermediate between O and L (OL).

This species has a most peculiar U & G & upward head-flick (HFK) complex. I see it quite frequently in the little mobile hostile groups on top of the cliffs, and also when an apparent intruder (possibly, but most improbable, in most cases) lands beside a sitting bird. In complete form, the bird stands in quite an Agg. U posture, rather short-necked and tongue very much raised and most conspicuous, with bill wide open, the tongue is pink and it is very strongly bent.

stated in Feb. 11, 1956, V.

(242)

more or less



more or less

This is sometimes interrupted. On a quick head flick, the head being tossed vertically backward, (I don't think that it

usually, or possibly ever, goes past the vertical). I think that the bill does, or tends to, during this flick. In apparently high intensity, cases the bird immediately goes right back into the Agg. V & G after the flick.

Agg. V & G often precedes attack

A corner ultimately, perhaps less aggressive, form of the Agg. V & G is an Agg. V without G. Some birds in the flock in this posture, after some Agg. V & G, or alternating it with Agg. V & G, during face to face disputes. Such birds may do more flick than birds that stay in Agg. V & G without any periods of Agg. V alone. Such birds are certainly less likely to attack their opponents. I have, in fact, seen several cases of birds in Agg. V & G attacking birds in Agg. V alone.

Some birds in the little hostile parties on top of the cliffs went into Agg. V & G, then started to walk around in an L posture & G.

The carpal joints are not raised in any of these hostile patterns. Usually in "pockets", at most barely visible.

The inside of the mouth, like the tongue, is largely flesh-pink. The flesh-pink at the corners of the gape are particularly conspicuous in all the patterns in which the bill is opened.

I haven't heard any more cases of pure Rattle recently, but I have heard quite a few LCWN's in which the non-rattle part of the note was very weak, i.e. the rattle undertone was predominant.

Noted some sort of Pursuit Flight. Two birds flying very fast, in large, more or less irregular circles, around the cliffs. With unusually rapid wing beats, (this rapidity was quite exaggerated). One or both birds was giving the SCW.

Have now seen several more chicks, varying from about 1/3 grown to almost fledged. Also quite a number of adults still incubating eggs.

Jan. 12, 1964

Have seen this bird much today.
One point about the SCW is that it is a very short burst of performance. The next action is usually a very short burst of performance. In the up-beat, a SCW is usually followed by a SCW. In the down-beat, a SCW is usually followed by a SCW. In the up-beat, a SCW is usually followed by a SCW. In the down-beat, a SCW is usually followed by a SCW.

I have seen the SCW follow into LCWN's again & again. The LCWN's, in fact, are almost inevitable after SCW. In fact, they always occur, unless some outside stimulus causes a change in the chain of behavior. But, of course, LCW can also occur without any preliminary SCW — which means that LCWN's are much more common than SCW bouts (in these circumstances, at least).

Bird lands, after being involved in pursuit flight with SCW. Alternates V&G with Gost several times, (this was definitely some type of "nodding"), and then, in a sort of gradual decline, alternates a few semi-V or semi-relaxed postures with Gosts.

All the disputes I have seen between neighbors on the long ledge of the cliffs have been accompanied by LCWN's, or, more commonly, SCW → LCWN's. I haven't seen any of the V&G complex patterns during disputes in which I knew that the birds were "familiar" with one another. Does this suggest that the V&G complex is high intensity?? Or does it suggest that the V&G complex is like the V&G of many gulls, a result of relatively very strong attack motivation at low to moderate intensities??

One or two LCWN's certainly seems to be the usual "Landing Call" when there is any at all.

One pair of birds is still definitely in the early nest-building stage of the building cycle.

Have again seen a bird do V&G — Gost — V — Gost — semi-relaxed posture — Gost — semi-relaxed posture — Gost — etc. This was probably the same bird that did a similar series before (see above).

Have seen quite a few more Pursuit Flights. No trace of swoop or loar in any of them.

Atlix, Feb 12, 1964

(244)

...in an aerial fight. ... of other ... hooded ...
... is a ... of ... birds involved ...
... other ... by ... birds ...
... toward us or toward them ... This is ...
... the hostile Gort is ...
... also appear to be an ...
... or comfort situations, prob-
... preening breast feathers.

A number of birds ... Two of the do ...
... both Gorts and ...
... after at least ...
... slight lateral head-shake component. The one bird ...
... does L + G brief.

... accompanying the ... slight ... I now ...
... component of this complex is ritualized.

The G itself looks more like this:



Front view of Gort emphasizes light cap

Watching a little group in an apparent communal area on top ...
... Very inactive, only preening & sleeping in most cases. The ...
... was a brief G, given from a sort of semi-Gort po-
... the neck was barely stretched up at all. This would tend ...
... theory that G-patterns are often low intensity.

But I have also seen, now, some displays between apparent ...
... on breeding ledges in which ... was used. Very closely ass-
... with actual attacking & fighting.

There is seldom or never any display by birds on ground (on ...
... toward flying birds. Rather unexpected!

Still more cases of SCW descending into LCWN's.

The SCW syllables are perhaps a little higher-pitched, shriller, ...
... than LCWN's. But the differences are certainly not very ...
... great.

I have several times noticed a bird giving SCW on its

October, Feb 16.

245

ledge, gradually increasing in intensity. The flight is circular, slightly, moving more or less in a circle (the flight). This is the same as the one I saw yesterday. It is because of the close proximity of the birds, and the intensity of hostility. But the main thing is that the performing birds have been more or less alone, or at least obvious, sections with one or two birds. Before they get out on the flight. This suggests that the SCW has sometimes been a general "hostility" reaction.

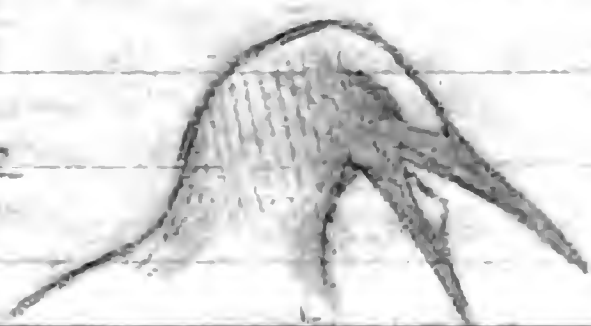
I must add, before I forget, that both the SCW and the SCW (or the high phase thereof) are apparently always given from flying birds on the nesting ledges. Presumably, cramped for space.

Oh!!! Saw a pair of birds flying around in circles, moving higher all the time, flying with very rapid wing-beats, (with a sort of "snap"), of at least considerable amplitude. This appeared to be much the same as the performance I saw yesterday in which the birds gave SCW, but these birds too were too far away for me to be able to hear anything. When the birds were very high, I lost them momentarily, but I am certain that it was the same two birds that I picked up again after a few seconds. They were then doing long zig-zag curved glides!!! This whole performance was only too reminiscent of the "high flight" of *Stenotriton*!!!

I think that the pursued as well as the pursuer is giving SCW during some of the simple pursuit flights I have been observing. But it is almost impossible to be sure of this in the present circumstances.

I have seen a little display between mates, when one joins the other on a ledge, but all the examples I have seen have been brief, and very difficult to follow because the birds are usually facing directly into their rivals.

The usual "greeting" display appears to be, as expected, some form of nodding. The only trouble is that this nodding appears to be very closely related to the G-HFK hummers described above. Identical, apparently, in some cases. The initial pattern is a down-beat, i.e. pointing head & bill downward, either from V, or in a post posture, with G-flaring, of these "V's" are



(I doubt whether many "real" V's - I think)

stolidus, Feb. 12, 1976, III.

(246)

that the neck is always brought forward a little, and it is never tilted upward very much. This followed by an HFK, and then another HFK, and by another downward pointing in another HFK, etc. This leads into an alternation of such an extreme posture, with the bird dipping its head. Just then stops.



This is followed, sometimes by FB and regurgitation. FB itself is a bit like the HFK, but it is a rather "faster" looking pecking at the side of the head. I assume that all the cases I have seen have been of a bird giving from the HFK to FB of mutual FB. Regurgitation has been difficult to see. Presumably all the cases I have seen have been by a male. The bird dips its head to ground, opens bill (displaying tongue?) And then regurgitates. This appears to be difficult. Some side to side head-shaking, rather like a gull trying to cast up a pellet.

I couldn't hear any sound with these patterns, and the Heddley itself is probably silent.

Incidentally, in the case of that "High Flight" incident, I couldn't swear that the birds involved weren't petrels, (that is, in the case of today's incident). They can look remarkably like terns at a distance. I'll check this again.

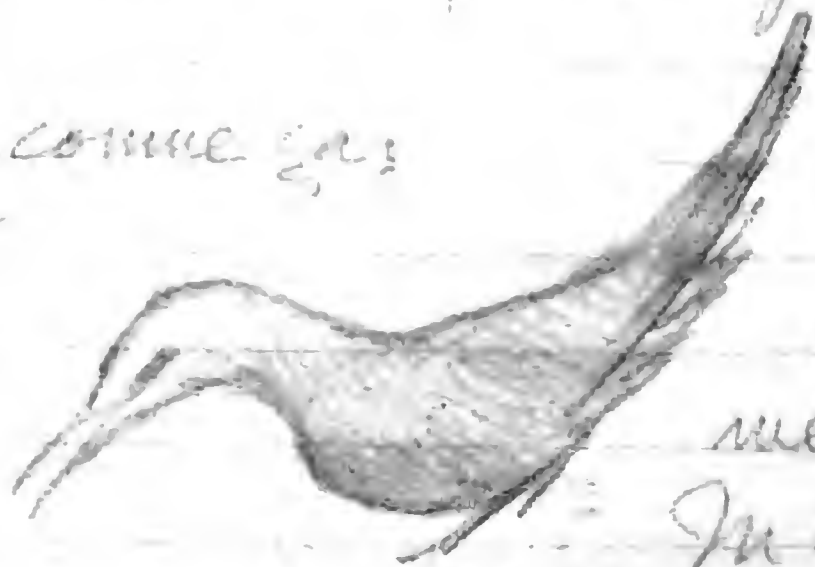
As expected, "displacement" nest building is a common reaction to "thwarted" incubation drive, i.e. by the sitting bird, when its mate comes in to relieve it.

One ♂ was seen to do two definite "displacement" over the shoulder-puckering movements when his "♀" FB'd from him. Very quick and nervous-looking.

Again it appears posture comes in: several times, in one case, at belly feathers were fluffed up-and-down bird more than during Chokwa.

The head went slightly up, forward, and then down.

And another Pursuit Flight, both birds flying very fast, with very fast wing beats, in rough circles, gradually rising.



Have seen this least, the accompanied by movements, slower. In one case at least,

1990

[illegible]

Feb. 13, 1956

...

113

100

studies, Feb 13, 1966, III.

549

There also seem to be the following upper part of the



and a sort of extreme upward inclined V. (V);

and the HFK:



known in the
posture at the top of the throat back is well
like. It is presumably because of this speed that the
whole pattern in actual life is most distinctive, quite unlike
the sketches of Sterna and Larus.

As these patterns occur now, at this stage of the breeding cycle, during "greeting" between mates, their order & sequence is very variable. The only more or less rigid feature is that the more extreme patterns, (i.e. the G's), and the more extreme postures tend to come first — and the less extreme postures later. I am not even sure that there is always a definite alternation of up phase and down phase, but this alternation is certainly characteristic of at least 99% of the cases.

It is noticeable that when one bird of a pair is swimming at self, half asleep on top of cliffs, and its mate approaches, the approached bird may do a moderate Gout & nothing else.

I watched an apparent regurge attempt, following a long series of mutual "Nodding" movements (apparently gradually declining in aggressiveness and intensity). The bird put his head to ground, bill wide open, (as in a rather lower necked Gout & G, or a rather short-necked, head-down, L+G), tongue not particularly conspicuous, and then gave a series of definite lateral head-shakes, bill still open. It is this that makes the presumed regurge attempts of this species look so painful.

Got in blood by 2 nests. Birds a little nervous at first. I notice that one of them gives 2 or 3 most conspicuous yawns, just like the Fairy Terns this morning. I think that this may have been significant.

Head appears rounded, in profile more so than the bird is - as seen from the front.

The whole bird of the front looks a

The species does not have an obvious special point of view.

In general, this species doesn't look unlike Stellulus, physically, except for the much narrower bill - Stellulus will take the same food as Stellulus, I think, waiting for food for next relief and then leave.

I think that the Stellulus form of Stellulus is an alteration of flight posture - and a slight C posture with the head & bill as Stellulus.

Stellulus are almost always found together on a ledge. In the morning, for example, for a moment, then one bird is seen doing SCW in C towards another bird, presumably, to mate - this displaying bird may well be a ♂. The interesting thing is that his burst of SCW is interrupted about 4 or 5 times, by downward nodding movements. These about reach position of slight Gort, bill tended to close and call to stop during the down nod. The mate of the displaying bird approached it during this performance, and then began apparent PE (posture at bill, etc.). The displaying bird had stopped calling by then, put head down and went through the usual peculiar sequence performance. I didn't see if any food came up.

This incident, plus general earlier observations, convince me that it is the downbeat of the Nodding that is the important part of the performance. It is usually, incidentally, the most emphasized part, i.e. slightly more rapid and "vigorous" than the upbeat.


The Gort-type downbeat certainly seems to be designed to show off the white cap. The fact that this would appear to be a relatively friendly movement, would suggest that this might be appeasement. Certainly, not for just what one would expect of a movement emphasizing white.

The only up-beat movement as "emphasized" even more "emphasized" than the usual downbeat, is the HFK. And I think it quite possible that this is not "really" an "integral" part of Nodding.

I went all below I have
and the family. I have
and I have the best of the

There was a perfect field of a 20 year old corn in the
fledged young men involved. The corn had still been in the field
in an adult - just a few days before the corn was cut. The corn
attached to the stalk - and strong stuff like the young corn was
before and after the corn. Near here beer beer beer beer

... This was the first I saw of the
day ago. But now I see that it must be entirely the same. The
call was rather reminiscent of adult SCW. But the notes were
notes were higher & shriller. When from a distance I heard
then, later, a whole lot of the same notes. The birds flew
toward me, from definite H. Call opening & closing of the
vigorous in rhythm with the call.

During the dispute I saw some peculiar nodding by one of the adults involved. Perhaps a case of Nodding continued with the young. Anyhow, the top of the up phase was  the bill may have been held open. I doubt I

The bill may have been
just open. I'm not
certain.


Gente stiff.
No trace of "beard"

20 June 1946

The juvenile also, during the dispute, several times stood in V & G. Quite clear.

The number of syllables in both adult + single word seems to vary tremendously. The call usually is 2-3 syllables in length. I also say that 6-9 syllables was the "normal minimum".

Most of the SCW delivered by land, flying around near the cliffs is not accompanied by the fast & happy flight.

11. Immature adult O., during both SCW and W. K. on different occasions.
 Run like this:  Quite straight, quite short, thick.

Balk of head
above the
the upbeat
least 22

Quite

Quite straight, quite short, neck
looks swollen. This is very common. Appears in
same form for both calls. Entirely constant to
posture of nodding shown above. In this sign.
In the upbeat of nodding the throat part
parallel.

approach the ♀. Each time he advances, she retreats a little. I think that this may have been a trick of the mind. The ♀ seemed nervous, retreated each time he advanced. ♀ finally flew off and I saw no more.

Again I saw a male of the same species, but I could not see the ♀. I saw for a moment a male of the same species, but I could not see the ♀. I saw for a moment a male of the same species, but I could not see the ♀.

I suppose that SCW could be considered a fast, high, rhythmic call, but, if so, it is the slowest I have heard of.

stolidus

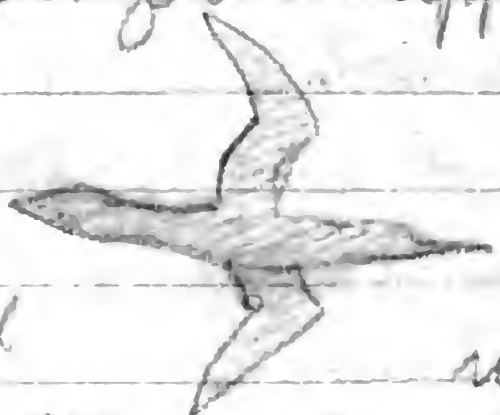
11. 11. 19

Well, I have finally had a fairly decent view of a High Flight. 2 birds, circling, with fast "snappy" flight. Gradually and irregularly rising. Part of this was definitely silent. This burst of SCW - I think by the purser. When the birds were fairly high, they separated a little, and the purser then uttered a series of longer notes, from a more O posture, exaggerated, "Putterfly" type. By this time I had lost sight of the purser. I couldn't hear the long notes of the purser very well, but I am almost certain that the last few were SCW notes. Then the purser glided down, quite steeply, in a straight rather than a shifting glide.

This was probably a fairly low-intensity high flight, as indicated by the fact that the birds didn't go as high as some I have seen, separated at top, and descended by relatively straight glides.

The wings were apparently bent but fairly horizontal during the glide.

long
tailed



I don't think that there was any pronounced dihedral.

Another case! Two birds rising as usual. Fast snappy flight. Suddenly, giving the SCW. Then, when they get fairly high, the pur-

... out of pairs off (a group of 2 or 3). The pursuer
... circle, then ... exaggerated
... calling - ... far away
... glides slower, ...
... circles of ...

... the high flight. ... as ...
... the ... by ... Got ...
... off again, (this may be a usual part of the
performance). Again the pursuer made a full circle (flying about ho-
rizontally) in ... flight. ... had just made a few
normal ... was re-approaching
upon its completion of the circle), now glided straight down toward
the water at ... angle. ... The pursuer then glid-
ed down to the water ... slow spiral
... turns about ... equal), including about 3 comp-
lete turns. The birds were rather far apart by the time they got down
to the water, and I couldn't follow them more.

There seem to be lots and lots of high flights going on today!!
Why? Surely I couldn't have overlooked them before. Is it because it has
been rainy and cloudy today, and therefore relatively cool? Or is it be-
cause the natives collected eggs yesterday, thereby putting a lot of birds
back in an earlier stage of the breeding cycle? Probably the latter.

The general form is certainly much as described - 2 birds circling,
irregularly, in fast, snappy flight, generally rising. One bird, the one
who is apparently the pursuer most of the time, giving SCW. The pursuer
seems to be trying to catch up with the pursued, following all the turns
of the latter, and sometimes the pursuer manages to get in front of the
pursued. The pursuer then continues flying in the circular, rising
course the 2 were following before hand - and the pursued continues
following just as if it were the pursuer now!!! (In one case, at least,
the original pursuer continued calling SCW after it had overpassed the
original pursued, while the latter was still following). In most cases,
I think, the original pursuer & pursued resume their original roles after
a few moments, as the turning & rising continues. There is no doubt
but that this reversal of roles can occur at least 3 or 4 times in the
course of a single rising flight. (I should add that I wouldn't be
at all surprised if both birds sometimes uttered SCW at the same time

or alternated bursts of ... (this yet). Then one of the birds ... glides, turning away from its companion ... I think the first bird of the two (the original pursuer?) ... the second bird (the original pursued?). It is noticeable that this gliding bird ... its bill open, ... !! But I haven't been able to hear any call. This may be silent. I don't think the tour is revealed in some form of ... but I am - be sure). The other bird immediately begins the ... flight with O, usually following a roughly circular path, and certainly in some cases uttering LCWN's. The bird that originally began to glide, has first followed a more or less horizontal course, (perhaps turning several times - either this way + that, or along part of the arc of a rough circle), but soon begins to glide gently downward. Still has bill open in some cases at least. By this time the bird in Butterfly flight has usually returned to about the same area where the two birds originally separated. It too begins to glide downward. These glides often undulate & become steep, and often include a number of turns & turns (the behind bird - usually thinks the one that did the Butterfly flight - following the forward bird), but it seldom or never approximates the fast, shifting, at sharp angles, alternating leadership, character which I imagine to be typical of many glides from high flights by sterna terns.

There are all sorts of variations in this procedure. Among the ones that I have noticed are great variations in radius of circle, regularity of circling, and speed & angle of rise during the rising part of the course. And the paths followed by the 2 birds at the top of the flight, & during the descending glide are very far from being fixed. I have also noted a 3rd bird tagging along, in fast snappy flights with, but about 10 yds below, a pair during rising course. And I have seen 2 birds begin to glide downward immediately after a rising flight, without any horizontal gliding, Butterfly flight or what have you.

Although the 2 birds are often quite far apart at the bottom of the descending glide, I think that they usually fly off to the "nesting" cliffs more or less together.

It is possible that the SCW given during this aerial performance is characterized by shorter, harsher notes, more of a "tuk tuk tuk ...",

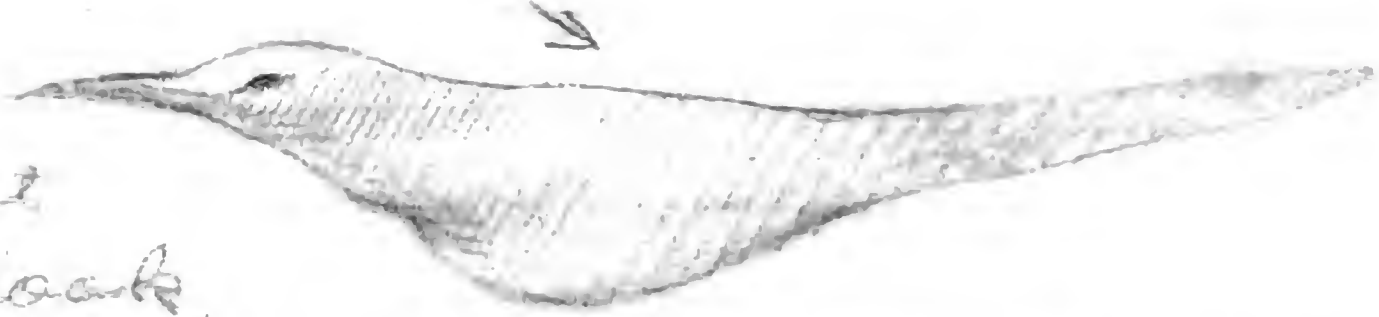
over the ground SCW.

The shape of the body of the birds during the rising snappy flight, and probably all fast flight, and during the descending glides (but to a lesser extent) is characteristic.

Back almost straight.

Head & body in prominent

Long-headed & long-tailed look.



The weather must have something to do with all this high-flying, after all. It was a clear day for about 10 minutes (2.30 pm), and all the birds were also sitting about 10 minutes ago - just like magic!!

I have seen one bird flying by itself in the thick of a low or low-lying flight near the cliffs. This bird was making, flying back & forth, irregularly, in extreme "Bouncing" Butterfly flight. And uttering LCWN's all the while. I think that there may be quite a rigid connection between these notes and this flight - at high intensities of motivation, that is!

Getting a little cloudy again, and I see another high flight. This time noticed that there were alternate periods of silence and "tut tut" calling during rise. Only one bird, definite. After the leader had pulled off the pursuit continued flying with fast wing beats for a few moments, continuing "tut tut tut..." call, before beginning Butterfly flight and LCWN's.

Another period of cloud - and another burst of high-flying.

Just had a close view of "pauful" response! Again no food came up. This time I am certain that the performance was silent, & un- less it was accompanied by a call far weaker than any other I have overheard from this species.

Just also seems to be the lowest intensity reaction by one bird when a neighbor lands on nearby ledge. Just and nothing more.

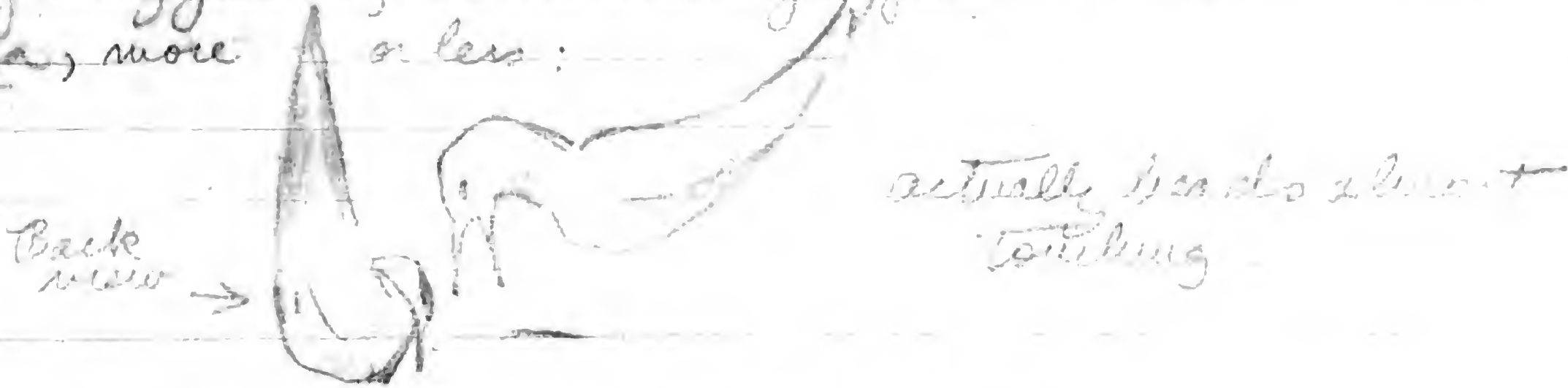
My drawings of "arched" O's are much longer necked than most O's in actual life - particularly the O's on the ledges.

I must say that it looks as if much of "nodding" were not an integrated, ritualized, performance as a whole. Seems to be an almost "coincidental" collection of upward & downward components. I have several times seen a bird do several HEK's in a row, with only an ordinary "standing" posture between them. And the same thing with

But I have to say that the "choking" is a new thing for me.

Another "mutual" performance, specific situation, was rather slow - moderately fast side-to-side head-turning. I think will do it for instance after landing on ledge, birds another and for few flutters off again about immediately from end - U or side - U.

One bird lands beside another on ledge after mutual "choking" (which I think is a catch well - mostly (Jojo) thinks), they both go into that "choking" posture that I drew on Feb. 12. (Possible raising of belly feathers, but no real fluffing. Birds seem to come in, more or less:



They then went into the usual "painful regurge" procedure; up-and-down head movements, slower than those during the "choking" of gulls, plus very rapid side-to-side lateral head shakes. The birds also to the mouth and at corners of gape was extremely conspicuous, but I don't think that the tongue was raised. The interesting thing about this whole performance was that the two birds also seemed to be "belling" i.e. their bills were continually touching, possible interlocking, and they also performed a few irregular slow side-to-side head-turning movements, quite slight, more or less correlated with the up-and-down head movements, rather like pigeons during billing.

The whole thing looked remarkably like the "friendly" "choking" of gulls, but as far as I could tell it was silent.

These 2 birds separated, and then, a few minutes later, another bird (presumably a 3rd) landed beside one of the birds who had just performed the mutual "painful regurge" pattern. The latter immediately went back into "painful regurge" posture, facing away from the intruder. (It was not joined by its partner in the preceding mutual performance - this partner had left by now, I think). The interesting thing about this solo performance was that it appeared to be accompanied by a call, a faint "kar-kar-kar-kar...", rather like SCW.

... much, much softer.
I think that I could well have ... Challenging ...
... Although the ...
... between the ... and the ... of quills is ...

... and ...
... I think ...
... similar, perhaps ...
... but the ... a little longer than ... and
... strongly ...

... the SCW's are not, per ...

But down on top of ...
I began nodding, down up ... all the
down phases ...
... the first 3 up phases
were SCW's in posture ...
... later up phases
... did nodding,
phases being semi-V's.



Have now heard an SCW on gro ...
... serial fighting
... ground SCW's and aerial fighting SCW does seem
to be a valid one

The difference between the ground SCW and the "tute ..." call
given during rise of high flight is also quite definite. Still, the 2
must be quite closely related, as shown by the fact that they are both
preceded by SCW's with apparent declining intensity.

In the sample of high flight with definitely only the presence
giving the "tute tute ..." call (HHC), and changing to perfectly typical
SCW's for the Butterfly flight.

The type of extreme downphase, with G, during nodding between
mates



lower mandible
pressed against neck

One of the first downphases during the
"greeting"

These birds seem to cause two or three different reactions. I have seen anything like a potential predator. I have seen them react to it, and it is a very low & distant reaction. I have seen them react to it, and it is a very low & distant reaction. I have seen them react to it, and it is a very low & distant reaction.

I have also seen a little reaction of silent Cawing. I have seen them react to it, and it is a very low & distant reaction. I have seen them react to it, and it is a very low & distant reaction. I have seen them react to it, and it is a very low & distant reaction.

Recently I have concluded that some, at least, of the upward motions accompanying RCWN's are really upward Nods. I have seen, in fact, be two types of upward motions with RCWN's, which should be partially distinguished. One, a more or less simple, largely vertical raising of the head and neck, may be the "usual" movement. The other, more of a "throw-back" or T, may be the real Nod. The two types are very similar morphologically, at best; and they undoubtedly intergrade very frequently.

One of the things I would most like to know is: does the upward Nodding help to reveal or obscure the sign stimuli used during Threat???

A good view of one V & G, silhouetted against the setting sun. Tongue definitely hanging down, outside the mouth. Most peculiar looking thing I ever saw. Is this usual??



stolidus

Feb. 1956

Another example of Ch by one bird of pair after mutual Nodding performance with mate after the latter's arrival on ledge. (This Nodding was fairly low intensity: Gost - (VV) - Gost - (VV) - etc.) Much as before. Too far away for me to hear any sound. But one feature of the Ch was most interesting. The performing bird kept pecking toward the bill of its mate. At first this looked like T B, but then it looked like an attempt to seize partner's bill! This may be quite common in Ch for all I know.

Copulation! Unfortunately, I didn't catch the preliminaries. Just found the birds after the ♂ had mounted. He made repeated Cop attempts. Started to wave wings and lower tail time after time. But the ♀ did -

separate at first, refused to spread wings, I am told, and kept
 head to feet. So the 2 gave up. After time, first
 started to spread wings while the 2 was still at first,
 but then the 2 was still, became more vigorous, the bill spread
 and the 2 was still. I couldn't bear this, as
 neither could I bear the pair and started to scream, and and
 I could, at times, of almost propped. Finally, the 2 coop-
 erated, and an apparently successful one or two contacts, esp. took place.
 When the 2 slid off, both birds went to the corner of the ledge,
 where there seemed to be a small nest. I'd at one another
 initiated contact of the 2. I am sure, but I hear call, if
 there was any.

I don't know how many pairs there are in the colony, (which
 really is not a colony, but a small group of birds, as
 we have seen in the island), but there are certainly hundreds.

It should be noted that the "Ch" of this species must be rather
 different from the Ch of gulls in motivation. - if nothing else. It must
 be a relatively low intensity pattern in this species.

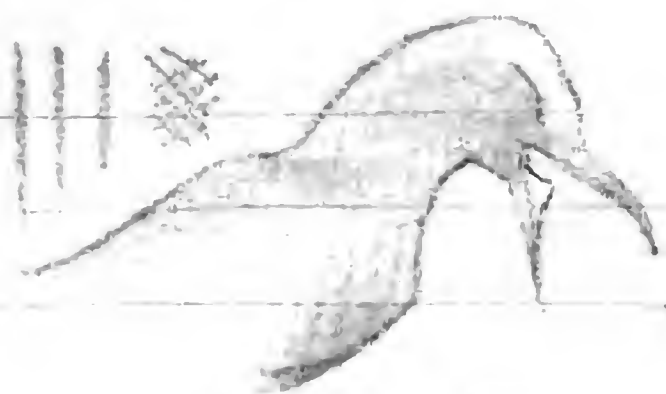
I should add, by way of confirmation, that the HFK appar-
 ently always has some trace of a lateral head-shaking component.
 This varies considerably, however. In some cases, it is very very slight.
 In others, it is extreme and conspicuous. I can't tell, yet, if
 this difference in form reflects a difference in motivation.

Again, mutual preening between mates followed by mutual Ch.
 This time both birds seemed to make rapid "trembling", large up and
 down movements of head & bill during Ch. After this was over, (about
 same time in both birds), they both went up into an ordinary relaxed
 sitting or standing posture. Then one bird immediately stretched he-
 ad & neck forward, tentatively touched bill of partner with its own
 bill about 2 or 3 times. This last looked like FB; but nothing came
 of it.

There have been no high flights this morning - although there
 have been periods of cloud.

Mutual preening by apparent pair, when one lands on ledge
 beside other. Both birds began with HFK, this is the first case in
 which I am sure that preening began with an upbeat. The one
 bird of which I had a good view did HFK - G-w semi-post

stolidus, 10. 11. 1971



— HFK — G. v. a. a. 1st post.

(V) — semi-G. v. a. — 1st post.

— good semi-G. v. a. G.

The pair that copulated earlier this morning, have been sitting on their large egg. One bird is predominantly right, and the other al building movements (all sorts, quite normal). Other bird just standing birds out. One other bird just off, gathers n.m., brings it back, drops it in front of nest. Little bit of building up but by bit, away is it by sideways building movements. Then back to before. From time to time, the standing bird begins Ch. (comes to rest, starts, rai red), and the sitting bird turns head back to partner (Ch. to Ch. & billing. This never lasts long. Back to before within a few seconds. The only other display the birds indulge in is single or mutual G. v. a.

Atwell. I have now & then watched these birds, and other, pick up a m. either to drop it right away, or deposit it sideways, and I have noticed that they often make tumbling movements of head & bill in these circumstances. Much like the tumbling movements of some Ch. This may only occur when water is present, however, and it may itself be a display.

There is another pair nearby, whose behavior has also been interesting. Looked up to find them both G. v. a. (G. v. a. relaxed posture, G. v. a. relaxed posture — G. v. a. — etc.) Facing one another. Much as usual — except that one bird had tail above wings tips! This con-

tinued for a few seconds. Then both birds began to Ch.

Much as usual. Bird with tail above wings kept it there. The other bird soon tired of Ch. went up into ordinary standing posture, or head - u. The bird

with tail above wings kept on Ch. and then continued billing for a few seconds longer. As its mate had raised its head already, however, the bird with tail above wings went into posture comparable

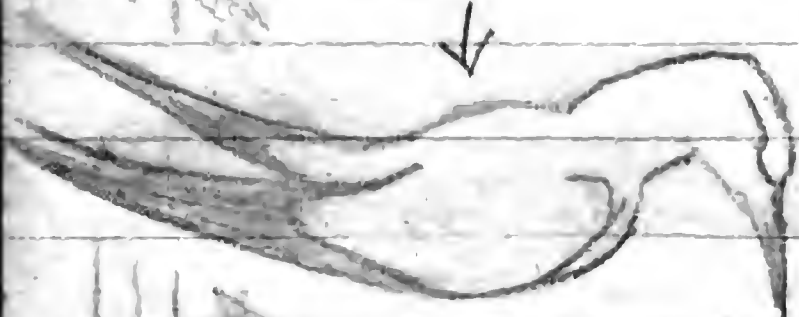
in order to do the billing. This stopped, and the

bird raised its wings and moved tips above tail

After this there was relatively little in the way of rapid,

extreme display, but the 2 birds went on in slow low

intensity display, off & on for at least 10 or 15 minutes more. At first, the bird which had had its tail above wings preened partner. This



was observed, at intervals, and later on in the morning, and the other joined the bird which had had a severe nap. This was a very common sight. Low passing, just off the ground, but low enough to be seen. Between the birds, sat, + did some flying. (Quite close to the ground, too frequent to be coincidence), + did a few FB's (these weren't more than 2 or 3 FB's more to I think the performance).



This is evidence that the birds are both 'friendly' reactions between partners. The two birds were obviously on the level of time, (there was no overt evidence of aggression between them, in fact, I expected a bit of a squabble at all moments).

Before this latter could happen, however, the 2 birds flew away. Damn it!

Fully fledged, or almost fully fledged, juvenile FB from adult. Just pecking at parent's bill & chin, repeatedly & insistently, from a more or less H posture. Can't hear any call at this distance. And certainly getting no response from parent.

Pair that copulated early this morning (call them A) in apparent mutual ill. Then one comes out of it. Other continues pecking bill of its partner from posture, come & go.



The juvenile has continued FB off and on. Certainly uttering some call during part of this. Bill opening (moderate) and closing. At more or less same time, from somewhere in colony, I can hear faint, plaintive, in the high pitched, "Kia bia bia..." notes. There may be FB notes given by the juvenile. Sort of moderate speed, nothing like speed of begging of *Sterna terms*.

An aerial pursuit flight, in quite ordinary flight, with 3 birds involved! Bird in front, twisting and turning. And at least one bird is uttering the aerial, high flight, version of SCW. (I am not quite certain if flying birds ever utter SCW just like birds on ground, but I think so - in low intensity cases, flying around cliffs in normal flight).

There have been a number of ordinary high flights today, but many fewer than at the peak time yesterday. Perhaps this is because

has been almost but never quite continuous. It is a very fast, sharp, occasional beaver-chirp or whistle.

A little more down than the bill, a small cloud, a small opening slightly down the up-and-down head movement. Most the slower up-and-down movements and the faster "trembling". But it is sudden. I have seen a small when the lateral head shake is over. Close a little. I have seen as soon as the lateral shake is over. (I almost instantaneous). And I am certain now that heads never brought up or rejected during "normal" Ch.

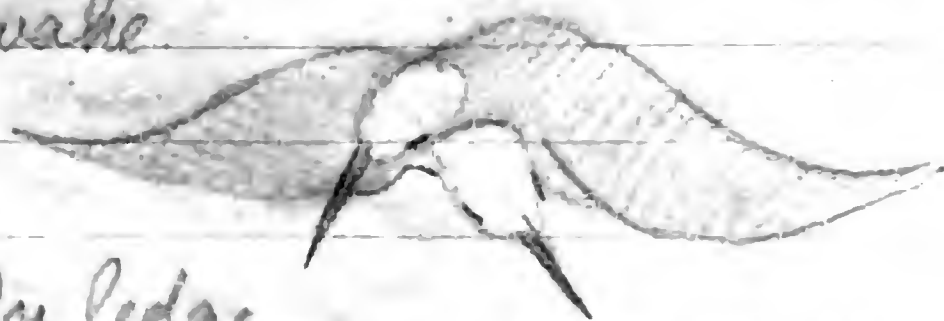
I have seen one case in which a solitary bird looked at another and revealed feet away. I don't know if the latter was the mate of the performer or not. (It certainly made no effect to grow the performer). If not, this is the only "purely" hostile Ch. I have seen so far.

Confirmation of something or other. I have just heard a young bird, after calling that of another flying bird, give SCW just like a ground bird.

More confirmation. Can now state definitely that the PB call of young bird is the high-pitched "singing" sound I described earlier today. Quite soft but with very great carrying power. Bill opens (moderate) and closes in slightly with the note. It is a tone of accompanying T.

Bird on ground gives SCW (brief) and then series of LCWNBs, with tongue course ca throughout. quite conspicuous

Neutral Ch with wings curved - just like "downward Ch" of the Kittiwake



On ledge

Actually, I think that I have seen brief series of two before

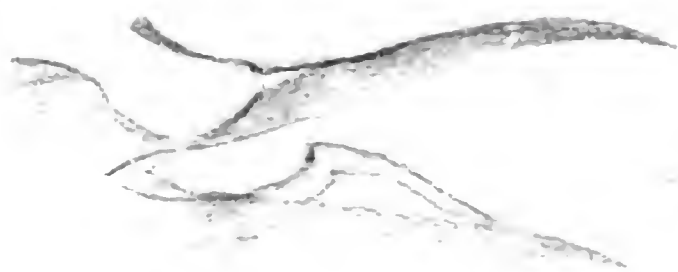
I think that the tip of the tongue (about the last fifth or sixth) is dark

The birds certainly seem to feel the heat very acutely. It is late afternoon now, (4:00), and the sun has come out and is shining on the cliff I am watching. Most of the birds are gaping, although it is far from being really hot. It goes to show why the birds pick out shady cliffs or little holes & crevices as nesting sites.

It is quite evident that the tongue is not raised on the edge of the mouth in the same way as in the adult. It is not raised to any great extent, and is not as long as in the adult.

I saw a bird that it was probably the corner of its mouth is not raised in the same way as in the adult. It is not raised to any great extent, and is not as long as in the adult. It is not raised to any great extent, and is not as long as in the adult.

G. ... like this:



The bird's tongue is just slightly before the ...

Another case of a bird, possibly a sparrow, flying from O on ledge, then flying off, cutting, giving SCW in flight just like bird on ground. (It is probably a sparrow, therefore - as I implied earlier - that birds flying on short flights near cliffs usually give an SCW like that of ground birds - if they give an SCW at all).

... on ledge give SCW - SCWN's. No tongue raised during SCW, but tongue conspicuously raised (the tip, that is, as in drawing on page 263) as soon as SCWN's begin, and raised throughout each succeeding note.

The whole neck and breast of this bird appears greyer (i.e. lighter) than the noticeably brown wings. (And the primaries are quite black).

... it looks, perhaps. The pink at corner of mouth does look as if it were on the near side. Almost under front part of eye.

One peculiar thing about landing technique of this species. Comes into ledges with fast wing-beats, getting progressively of smaller amplitude. The last few are of very small amplitude indeed, hardly more than shivering. And this shivering continues for a second after the bird has landed, after the wings have been folded, before diving down very rapidly.

Have just seen a case of SCW - SCWN's in which the pink at corner of mouth was definitely on near side.

I should add that the juvenile FB call is very different from the more hostile notes I described during the first few days here. The latter, although higher pitched than adult SCW and SCWN's, are still very much lower than the FB notes. Must still be transcribed as "Kwan" or "Kaarr". The main similarity between the juvenile

stolidus for 14. 25. 50

205

calls & that both are usually given in sequence -

The type of alarm given is rather good proportions in general



Some of the most fast-acting downphases are really quite good appearance. But not necessarily neutral motivation. (I have never, attack develop from such a post -



It's in physical appearance in fact, seen as

Pair on rather low ledge displaying like each at one another for a long time. Begun a mutual chok-ing, which crossed. Then separate a little. Much nodding, beginning to alternate V's or G's - G's & G's and H-T-K's, gradually developing into lower-intensity nodding. Then both walk up a lower ledge, much of the time in L's & G's. Then a little more nodding, with the V type and the lower intensity mutual ch. more nodding etc. The whole procedure then repeated once more! Then relax. One bird away. This incident, with its close association of Choking with G and H-T-K, certainly proves the existence of a strong hostile component in ch.

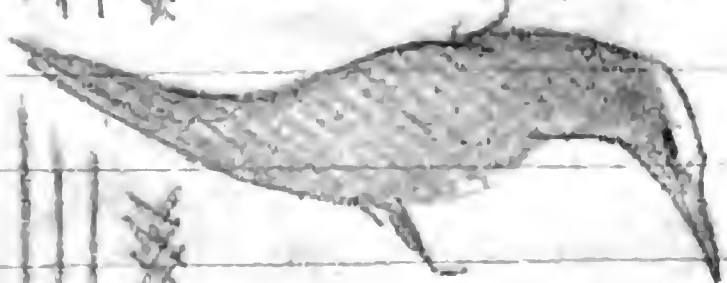


Then a little more or G's & G's - H-T-K type. Then more all types.



flies of

A little more on the description of ch. It is noticeable that whenever one bird of pair begins to choke, the other bird usually rushes over to join in the ch - although perhaps less vigorously than the first bird. The ch. postures seem to vary from



to



Part of this variation is apparently due to factors of terrain, but it is very probable that the tail-up postures are usually of higher intensity than the postures in which the tail and body are approximately horizontal. I can also confirm the fact that the lower belly feathers are almost always somewhat raised during ch. (These

than the postures in which the tail and body are approximately horizontal. I can also confirm the fact that the lower belly feathers are almost always somewhat raised during ch. (These

stolidus

(166)

is also almost always a lightish spot about where the anus would be. I think that this is merely an indication of the feather structure - as I think that the feathers of this species have light bases.

Photo -
February 17, 1956.

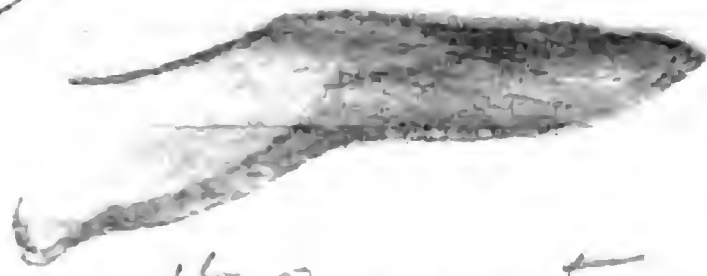
... displaying so vigorously ...
... did a few brief "new-
ours" ...
... over the
shoulder, once a straight stroke on the breast.

There is probably a general tendency ...
... so that beaks point toward one another ...
... but actually cross. Even when the birds are quite far apart.



The coped joints are sometimes visible during displays, but I think that this is pure "coincidence" rather than a sign of strong drives.

It is remarkable that birds on ledges usually ignore flying birds, but there are exceptions - particularly when a group of birds is flying around, screaming ...
... Many of the ground birds will also ...
... and some of these definitely appear to be directed toward the flying birds. It is possible that ground birds also occasionally scream ... toward flying birds, but this must be relatively very rare.



Roughness of upper wing.

Some V's with G are extremely "swollen-headed" toward the rear of the head.



White spot about here, but there is a noticeable relatively light grey area extending further back along swollen crown.

I flew in to join ♀ on ledge. Mutual Nodding; Gost - (V) - Gost - (V) - Gost - (V) - etc., gradually declining in vigor and apparent intensity. Then ♂ begins preening, about 4 or 5 movements, both

stated in the first paper

145

under a house wing. You must go to the house to see a pair of a few weak birds. Then I began to pick up birds of food, then after the first bird I saw a pair of birds, as quite "delicate" like both birds were.

Then standing beside me, and I began to pick up birds. V&G's and H&K's had been together at which point the presumed mate of the whole bird came over and they too stood together. Is this courtship? Is it partly seduction? (i.e. water laving one another to display, when the "mating" is really meant for the display pair)?

One interesting thing about the Haddock is that it is involved in the above incident. Since it was in the water as the up phase of its Haddock.

Pair A is the same as the other. Both birds sitting in an "excitation" or "rest" position. Most of the time. They occasionally do a little individual preening (with occasional side ways lateral head shakes), but most of their time is spent in display. Lots and lots of mutual Choking, in which the ♂ is generally more vigorous than the ♀. An occasional H&K by the ♀. And the ♂ repeatedly preens the ♀, the sides of her body, her wings, and her upper back. She just responds by closing eye on side being preened and raising bill a little (looks "distasteful"). Then ♂ turns away, seems to do some SCW-LCWN's (I can't see any stranger who might be preening this), while ♀ Ch in rest-site. Then back as before, mutual Ch., individual preening, ♂ preening ♀, etc.

Have seen lots of mutual Pudding between mates during the last few days, and I think that my general account of it is quite correct. Begins usually with down phase. The first few Nods are often high intensity, i.e. V-Gosto & G and H&K's, gradually declining in apparent intensity. A great variety of variations in the actual sequence of individual movements; the only general, and probably invariable, rule being that up phases and down phases occur in strict alternation. The declining Haddock is often followed by Choking by one or both birds.

One bird lands beside another on ledge. Mutual Pudding, involving V&G's. Then one bird does V&G, attacks the other!

I have seen both birds of pair A, at different times during bouts of mutual Ch., briefly pick up m.m. and then drop it.

I must say that the rarity of copulation attempts in this colony is most surprising. There are plenty of pairs around without eggs. Surely all the eggs in the nest are laid at night!

Everybody seems to be sound asleep already, 8:00 a.m.

Can A. continue as before. And this time I see the reported preening at O's bill. And certainly starting to preen his chin feathers. So the social preening is as definitely reversible.

Again at 8:15, a display on condensation, nest while O makes collecting trip for a while. Mutual display on his return. O Ch, & Ch & preening at O's bill.

I might say that the bill of the Ch in which belly feathers were definitely somewhat ruffled (as in the first case, sketched days ago).

Just as an added confirmation, I can say that the Ch. posture of this species also seems to have been derived from a nest-building posture. It is exactly the same as the posture of the A bird sitting on nest, particularly when turning, sweeping, and kicking backward with the legs.

Even though the tongue is not raised during most Ch, there is no doubt but that it is the tongue, lying in lower mandible, that contributes the most vivid flash of orange-pink to the display, particularly during the lateral head-shake.

Can really hardly over-stress the frequency with which mutual preening takes place among mated pairs. But, still, it seems to be relatively less frequent than in the pair of Fairy Terns I have been watching.

I think it is fairly evident now that a pair will sometimes Ch. at one another when actually initiated at neighbors. But this reduction is much less common than, for instance, reduced Ch. in the Duck Tern.

There may be a low-intensity form of SCW in ground birds. Much like high-intensity form, but much less elongate, head nearly horizontal ←, and call softer (I haven't yet been able to hear it).

Some of the semi-V, semi-goat, G postures are very angular, almost erect.



Very "flat" in front

There is no doubt but that one of the A birds, presumably the ♀, is

already "sitting" in the incubation phase - although I saw no eggs yet. Just as in B. & G.

Some of the same 2. some 3. postures (which are well just about the same as the postures I have been calling Egg U's) are rather large & needed them I have been clear on them.

I am becoming more & more convinced that most of the Choking is either silent or with a very soft call indeed. Probably the former.

Mutual "greeting" display of Ch - LOWN's in 2 (possibly directed toward flying birds) - nodding (at first high intensity, gradually declining) - more Ch - and a final series of Gorts.

I am also becoming convinced that there are probably all sorts of intermediates between ordinary "ground SCW" and "ground fighting SCW", and that the 2 should not be distinguished too rigidly.

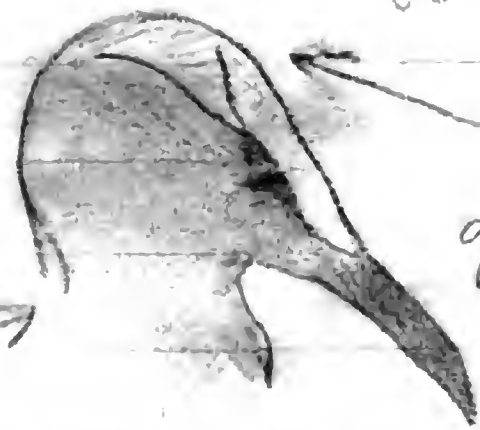
There can be perfectly good Ch. movements, (i.e. up and down - in the case, back and forth - and sideways head shakes), in a semi-U, semi-Gort or Egg U posture. No need to go down to ground. But such variations are relatively rare.

There are numerous movements in some Ch. which are very reminiscent of a gull sitting on nest and depositing m.m. on either side of its breast, (i.e. slight, "incipient", sideways building movements). These are quite distinct from the lateral head shakes.

A number of High Flights again during a cloudy, windy period. Much as before. Only unusual variation I saw was once the leading bird, after fast rising course, did two zig-zag short glides, with wings in dihedral, before beginning Butterfly Flight.

There is no doubt but that many of the birds in Egg U (with or without G) during high intensity hostile nodding have the back of the head very much swollen indeed!

Almost no forehead rise



It is this grey area that looks the most swollen

Juvenile flying from place to place along cliff, is screamed at (mostly LOWN's) and attacked, both in air and on ground, by all the birds in the neighborhood.

Juvenile was in a on ground



typical hunched posture when during all this attacking

The swollen back to the head, almost raised, is present in some close.

I saw a pair of birds, including pair formation, young or under-
 one, and a lot of other birds, but not a lot. It is hard to tell, and
 the birds are more active than usual during the afternoon, but few
 birds have just taken in.

There is a lot of apparently single birds with "stations" on
 the cliff. They spend a lot of time in the air, standing alert, screaming
 both SCW and SCWN's — and mostly the latter — at many flying birds
 that come fairly close. They also seem to be in the air many at neighbors, or
 at least near neighbors. They also fly off to attack a neighbor or fly off to
 attack a neighbor or fly off to attack a neighbor. This leads to various short pursuit flights, and the attacking birds also
 often chase or attack themselves. They move in and out to the same spots,
 or at least general areas, from which they left. They also occasionally fly
 off on little circular flights, obviously hostile, as the birds often scream
 SCWN's in flight. Every rarely SCW in these circumstances. Again, they
 usually return to the place they left. (Sometimes, after both attack &
 circular flights, both birds will land in an entirely different area, but
 this is usually brief — they soon return to their favorite stations). This
 behavior is certainly very reminiscent of unmated ♂ B.L.G.'s.

Each bird has its own station, and is usually in a certain posture. There is then usually a mutual
 nodding performance, including the highest intensity & most hostile pat-
 terns, i.e. Agg. V & G and HFK's. In most of the cases I have seen, the
 owner of the station soon attacks the visitor. Attack usually from Agg.
 V & G. The visitor flies off. The owner may follow, and then may be a
 brief aerial chase, but the owner quickly returns to his station. Again,
 this is very reminiscent of unmated ♀ B.L.G.'s visiting unmated ♂'s.

I am fairly certain, moreover, that I have seen a small bird
 (presumably ♀) visit 2 apparently single birds, at 2 different stations,
 in quick succession. Did a mutual nodding performance with each. This
 same visiting bird also almost alighted beside a third apparently un-
 mated bird on its station.

Noticed another case of mutual Choking in which one of the birds had
 its tail above wings. This was a particularly vigorous and long-sustain-
 ed bout, and perhaps the tail above wings is characteristic of much

high intensity Ch.

Another thing I noticed in the *Stelodius* group was more calling, SCW's, in an upward rather than downward phase of the nodding. I saw at least one bird do this several times repeatedly. It is possible that some of the SCW up phase nodding were actually directed towards flying bugs, but it is by no means sure that they all were.

The hum O looks rather like this in its most rapid form.

I have heard several more "pure" Rattles during the last few days, but again I haven't been able to make absolutely sure which bird was giving it from what posture. Once I thought a bird gave it from O, before a series of SCW's.

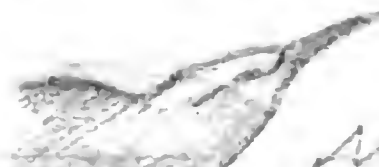
One little descriptive but the rhythm of many SCW's on ground is just like that of the Cop Calls of many gulls.

(Paron ledge of A pair (probably a pair in fact), showing nodding and playing with an adult - then one bird flew off, landed at another spot quite far away! (Looking back I saw that the other bird had flown too, but it doesn't come near the bird who has landed at the new spot). It then just stands there for a while. Then starts giving SCW's so rapidly repeated that they are almost continuous. Some of them are of the "low intensity" type, which I can't hear in these circumstances, but others are quite high intensity, loud, and easily audible. At last, after a particularly intense burst of SCW's, it flies off, screaming more SCW's during the last part of its flight (at least). This incident looked almost as if the bird were screaming SCW's out of sexual "frustration", as if it were "calling" its absent mate. On this connection, other cases of solitary birds giving repeated SCW's until apparently "driven" "out of desperation" to take flight - and at least one such case is described on an earlier page - maybe significant).

An adult does low intensity nodding to its own offspring, (almost fully fledged), upon alighting beside it! (There wasn't another adult anywhere nearby).

One of the postures assumed during flight is that
seen first aerially by the Yuca Teui. This posture
is characterized by the bird's head being
projected (partially or fully) upward, and it is probable that some
birds use it to avoid obstacles in flight. (Some of the postures in-
sight become almost like a "D" shape.)

All the young birds I have seen so far (perhaps 3 or 4) have had
white throats.

Long series of mutual display between members of pair. Mostly mutual Ch and mutual G. Both birds continued, aggressive, and low intensity, low intensity. A few of each of interest. Both the Madding and the other frequently interrupted by one or both birds screaming SCW and/or LWN's. Most of these screams directed toward the other or birds flying by. Some of these screams took the place of aggressive Mads. Several times, a bird interrupted Ch to rush back to side and display in Agg. U + G, or LCN, or SCW, Tow- and neighbors. This looked very much like redirected aggressiveness, provoked by mate and vented on innocent bystanders. Can confirm the fact that Ch. is usually confined to one particular spot of the territory, i.e. the potential nest-site. Both these birds always rushed over to this site whenever they began a bout of mutual Choking. Once, during the Ch., one of the birds repeatedly pecked into the mouth of the other. Had to go into that hunched head-up posture  in order to do it. Again this looked almost like some form of FB.

stolidus

Photo Mui,
February 18, 1956.

I forgot to mention, in the description of the last incident yesterday, that one of the birds, in the middle of the mutual displaying, gave a burst of SCW, and then flew off on an obviously hostile circular flight (with both SCW and ICWN's). This sort of thing is not too uncommon. I have seen a number of other circular flights interrupting prolonged, generally high intensity, mutual displays. They are usually, but probably not always, preceded by Cawing of some sort, and they may or may not be accompanied by Cawing in flight. I presume that even the silent

circular flight to see how it looks.

Another case of mutual ch. ... one of the birds goes down into bunched head-up posture in order to peck the (red) bill of its partner.

While one of them stays in the bunched head-up posture, the other does a burst of low-intensity "SCW", which is interspersed with pecking, scratching, and Gests. After a final quick burst of low-intensity SCW and then flies off.

There is no doubt but that this low-intensity SCW, as well as the ordinary SCW, is often a "pre-flight" pattern - whatever that may mean.

I should say that simple Gests, without an obvious standing posture in between them, are the lowest intensity form of Gestic. They seem to occur after all the other forms of Gestic have died down, (that is, when a long series of gradually declining Gestic occurs as a mutual "greeting").

Well! Another pair again. Brief mutual ch. Then one bird (♂) begins to peck at partner's bill from bunched head-up posture. Partner goes up into standing posture & continues pecking. By this time all traces of Ch postures & movements have disappeared. ♂ finally goes down into a sort of slight M posture and opens his bill. The ♀ now pecks fruit into his mouth, almost seeming to peck down into his throat! The ♂ eventually throws up a fish (supper), and the female takes it almost before it has reached his mouth. (This taking the fish from the back of the mouth is quite unlike gull behavior!) The ♂ then closes his bill, goes back into standing posture & still pecking at his bill, still from bunched head-up posture. The ♂ eventually goes back into M, opens bill, and allows ♀ to peck into his mouth until she finally manages to extract another fish. Etc. Etc. This repeated again & again. The ♀ was fed at least 4 times!! After the last time, the ♂ began a burst of SCW and flew off on a circular flight.

Some implications of this incident must be emphasized!

1. The pecking at partner's bill that I have seen during many bouts of mutual ch. is apparently FB.
2. Actual FB and food regurgite.

extreme O, but head low. ... open, apparently celebrating ... 4 LCWN's, unusual ... movements.

I have seen some ... low-intensity ... Goats and nothing more ... interrupted or accompanied by ... lateral head shakes (quite distinct from the HEK's). These looked quite ritualistic — but were probably more than mere "coincidence". It is doubtful, however, if they should be counted as real upphases of the Huddling.

Another case of mutual ch. between members of pair, apparently "directed" toward an intruder on the borders of their territory.

Shape of head during C from above. Two peaks on back of head. One at about the end of the real white cap; one at about the end of the gray.



Whenever one picks up one of the half-grown or nearly fully fledged chicks, it will usually scream one or two notes of its purely hostile cry. All very reminiscent of young gulls at the same stage.

Moto Iru,
February 18, 1956.

The only other land I saw more I saw around here was a single Sooty Tern flying over water on the morning of February 14th. I think that I may possibly have seen a pair of Grey Ternlets flying over Moto Iru on the evening of February 12th, but this must remain very dubious.

Photo Nov.
Feb. 3, 1956

... birds, a pair and a single, some of the ...
... birds, however, and only been ...
... and I have been ...

When on the ground and nervous because of my approach ...
... the usual level ... head turning ...
... mouth wide open ...
... One or ...
... as the ... of ... in ...

When the 2 birds of the pair were sitting side by side, one ...
... of the ... of the other quite extensively ...
... One of them repeatedly uttered a double note. "Wheet -
RRRR

"Wheet - Wheet - Wheet" Most peculiar. Obviously a distinct
RRRR RRRR RRRR

sounds being uttered at the same time. A rattle or "R" undertone quite distinct, and, although faint, quite conspicuous.

I have since heard one of the birds on ground utter single "Wheet" (I don't know whether it had an undertone or not) when somewhat alarmed by me. I wonder if this is an Alarm Call.

I have also heard flying birds utter single notes, very difficult to transcribe, perhaps "Kah" or "Kwaaa" are as good transcriptions as any. Once by bird flying above me. Again by one or more birds in the birds between an actual fight (see birds).

... of the birds of the pair, on the ground, gave a burst of notes when his mate came into view. ... posture more or less like "territorial LCN posture" of gulls. Unfortunately, I did not catch the rhythm or arrangement of these notes - from a distance they sounded almost "random" - but each note was certainly similar in quality to the single notes described above.

The only complex call I saw was when the male of the pair flew up to join the female, flying above them. He made a "hook-out" and was answered several times. As far as I could tell, the "hook-out" was the same as those of other small birds and larks. I did not see any other "hook-outs" or movements. (But on all warm days, complex and simple notes, with this fighting, hook-out, and after, fly in the air and ————) This note was very similar to the single note described above — in quality, but not in the first part, which was shorter, more abrupt. Could also be translated "tik" or "Kik-er".

All these "Wal" or "Kwan" - like notes are very like a "tik" note like, as Murphy says, but the, all have a rather indistinct quality. They all, in fact, sound rather like what one would expect of a very small fly.

This contrast between a relatively long single note, and a much shorter but shorter notes associated with fighting in the air, is very reminiscent of the CUN - SCW sequence of calls in the Parula. I wonder if this is significant?

I might add that once, when the 3 birds flew above me, I heard a burst of shorter, more "tik" like, buzzy notes, (very similar to the others in quality). Is this a distinct call??

alba

Moto Mui,
February 15, 1956

Pair of birds land near me. Possibly nervous about me. Quite a lot of Gorts, about 2 very nervous appearing sideways pr. movements, a lot of yawning (not showing tongue).

Several times one of the birds flew or jumped a few inches nearer the other. The "greeting" displays were then of several types.

Once both birds did Gort. (I couldn't be sure that this was n't just coincidence, or that the birds weren't just nervous about my presence).

Once the approached bird gave a burst of the "Sharp Notes" (see below, for further description). About 3. Just lifted head a neck a little, no appreciable forward inclination. Bill opening (widely) and closing, rapidly, in rhythm with the notes.

Several times the approached bird just tilted its head & neck forward. It also bowed at same time, but bill remained more



Carpal joints held out (but they almost always are in this species, even at complete "rest").

Uttered about 2 "whizzing" "muffled" notes at same time, (very similar to all the other "whizzing" notes of the species — but even softer) — this definitely occurred twice. The second time the approaching bird came closer, and preened the whole side of the face. Back of head, & neck of the approached bird. These preening movements were not of tentative nature. But I am sure that they were not "guarded" attacks. The approached bird just stayed in its "low" posture, occasionally turning a little to present the back of its head to the attention of its mate, and showing a general tendency to point its bill diagonally downward (almost approaching the vertical once or twice).



Posture of bird being preened.
(Head sometimes lower).

This stopped, after a few seconds, and both birds flew off.

After this incident, and the one recorded on February 13, it is obvious that "social preening" must be a most important display in this species.

I might add that the bird who was being preened uttered 2 soft "whizzing" notes, just like the "invitation" to preening described above, during the course of this preening.

The bill movements accompanying these "whizzing" notes were the same in all circumstances. Very slight opening & closing — in rhythm with the notes, I think. It was hardly noticeable that the bill was being opened at all, looked just firmly & completely shut to casual observation.

There has been a lot of aerial fighting going on. All three birds flying together. Much rather fluttering, moderately erratic flight. Sudden

excursions, with swift beating wings. The charges may sweep out also swoops. The swoops appear to be simultaneous - not really more who starts first, and both birds go plummeting down, often in a steep zigzag for considerable distances. I have seen a few swooping so far, but these are relatively rare. The birds will usually fly up perhaps flying upward after the swoops.

This aerial hostility was accompanied by a series of calls. The vocal display of this species would appear to be divisible into the following categories: (1) "Wheet wheet" Usually double notes, sometimes single, sometimes many notes. Sometimes with R undertone, (but the undertone is difficult to hear at any distance - and in some cases I am fairly sure that it is absent). This is a common reaction by birds flying above me, and I have heard it, once, when all 3 birds were milling about in general low intensity aerial hostility. (2) Single "Kwaah" or "Kwaaah" note. It appears to be the loudest of the calls in the present circumstances. See Feb. 13, for circumstances. Birds from the call cited there, I have since heard it given when one bird was swooping at another. (3) The sharp note. These are probably best described as "tite"-like notes, but this is really a very poor description. They are also very buzzy, and I should be at all surprised if the sharp note intergraded with the "Kwaaah". Typical sharp notes are common. Either single, frequently repeated, or (probably) especially when flying, in series of 2 or 3 notes. Commonly given by birds flying above me, (and see references, Feb. 13), and during general intra-specific aerial hostility. These or the notes sometimes given from sort of unritualized ICC posture, by one bird of pair on ground toward its mate (see references earlier today and Feb. 15). (4) The Polyglottic call of similar but shorter notes. Not only is this common in aerial fighting, (as described on Feb. 13), but it also occurs during aerial hostility when attacking was not occurring (for the moment), and when all three birds, the single bird as well as the pair, are trying to land together in a comparatively restricted space. (5) The Muffled (whizzing) Call, associated with social preening between members of pair, (see above, earlier today).

It should be noted that, with the exception of one evening, when the 3 birds flew overland, they have only been here from 8:00 - 12:00

to measuring, and so on. Have been here since then. With the
 (possibly a bit of) ... when I left for the ...

all-us

Feb. 9, 1960
 Feb. 10, 1960

The birds were ... around 2:00 - 2:30 ...
 found a couple of birds ... land, ...
 all the birds too - but out of sight, and out a while.

While in the air, there was a good deal of hostility, much as yesterday. I don't add that I have ... approximating a high flight.

When the pair landed, their behavior was also much as yesterday. I don't see the ... together, but the larger of the 2, (♂?) ...
 for ... times and returned. No apparent initial greeting in either case. If there might have been a weak call - I was too far off to hear well - but I don't think so. The ♂ usually landed a few feet away from the ♀. The ♀ then rolled over to him in the "preening invitation" posture described yesterday. Instead of waiting for the ♂ to preen her, however, she immediately began to preen him. After a while the process was reversed, and he preened her. This mutual preening, with constant reversal of roles, back & forth, went on for quite a long time - although rather desultorily, with frequent intervals. Usually preening side of head, or top of head, or nape. Particularly the latter. Occasional brief preens at upper back feathers. This preening was definitely accompanied by rubbing movements of mandibles. The usual response of bird being preened was to turn head slightly - presenting back of head & neck to be preened some more. The bird being preened would occasionally half-shut its eye, (seemed to be white upper & lower eyebrows coming together). This was the eye on the side not being preened. (I never managed to see the other.) I couldn't tell if there was any Muffled Calling during this preening, or during the preceding invitations to preen.

Occasionally, one of the birds would stretch forward and, instead of preening partner's feathers, make a few tentative pokes at partner's bill. This looked much like the behavior of a pair of Noddies.

I observed this morning.

When not engaged in social activities, the 2 birds just stood most of the time. They, however, did quite a bit of autoaltruism - looking at individual preening, and quite a number of Gasts (these were very low intensity - looking, rather than actual & slight).

The 3rd bird tried to come down and join the pair on ground twice. Each time, the birds of pair just lifted their heads slightly and remained at him. The ♂, at least, of the pair, screamed the Poly-syllabic call (bill opening widely) & clapping in rhythm with the notes.

I think that, in these cases at least, the notes of the call became gradually lower in pitch.



It should be noted that it is so windy here that the feathers of the birds are almost always ruffled. Makes it very difficult to tell whether there is any feather erection with display patterns or not. I can, however, definitely state that the feathers of head, neck, & body are somewhat smoothed in the "Alarm Posture" sometimes assumed by birds on ground before flying up.



Even this is incomplete, however, as quite a few feathers here & there are still lifted by the wind.

Must note - for drawing purposes - that the front part of the body of this species looks quite round & plump; it is called the "ear half" (i.e. the prominence of wings) which is long & thin & curved.

The head is very flat on top, back & front views.




back

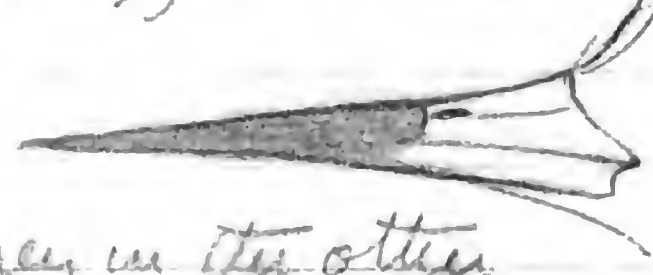
I leave for a half hour, and when I come back the birds are still preening one another, and still poking at one another's bills. (I am fairly certain that this "poking" is essentially the same thing as social preening - it is just that the bird wanting to preen doesn't orientate precisely, or the bird to be preened doesn't turn its head when it "should".)

No! I take it back - partly, that is. There does seem to be a definite tendency to peck at the partner's bill. Words, etc.

The pair preened for a full half hour. Nothing much just a social preening, every few minutes (I cannot gauge the frequency, and presumably importance, of the preening), and in general, casual and seemingly coincidental. Just.

The pair finally flew off when a fulmar came bushes out among the nearby Gleditsias, but the birds were back to almost the same spot. They circled him off again. Then back again to the same area. They certainly seem to be showing a definite pattern of behavior. They were before. Are they really sitting on eggs?

Eye seems to be about as follows:  Large and dark, with a ring of dark feathers around it, (possibly interrupted at top - where nodules have white upper eye-brow), and a black mark in front of eye.

Bill is like this:  the base is lightish, the ♀, and plain lead grey in the other.

The tip & middle are blackish, (blue grey in one bird, possibly bird).

Finally got a view of the eye on side being preened during social preening. Half-closed, as expected; (in this case, the eye on the other side was wide open).

Feet & legs very short. Blue grey. Wings apparently light pinkish. One preener posture while being preened.



(The preener is behind this bird, and on the other side).

I should add that, in both the species and the Brown Noddy, there seems to be a close connection between the motivations of both social and individual preening. They tend to occur in close temporal conjunction. Does this suggest that the social preening is, in part at least, motivated by a "comfort" drive of the preener??

I have seen one of the birds of pair do several Gosts when left alone after its partner had flown up momentarily. This bird was far away from me, and did not appear to be nervous about my presence. Does this mean that some Gosts are "general frustration" reactions?

Have seen a few more Gosts when birds did seem nervous about

albus Feb. 17, 1956

me

The connection between individual & social preening can be close. One of the birds preens itself vigorously, and shows no overt inclination to preen its partner. (The connection, when it occurs, always or usually seems to be "for other man".) A bird preening its partner always or usually interrupts its preening, from time to time, to make one or two brief preening movements toward its own feathers.

When I leave at 2:10, the pair is still here — an unheard of length of stay. But the third bird hasn't showed up for hours.

Birds gone by 5:30 p.m.

albus

Feb. 17, 1956

There are 4 birds around the island today! But they seem to be reluctant to settle down on ground. Finally, one pair takes land.

A low intensity, short, version of the Polysyllabic Call is heard 4 syllables long — — — — Heard it when 3 birds were trying to land together, and some hostility broke out.

More mutual preening — as usual.

This pair seems to be back in the same old spot they preferred yesterday. More Gorts; at least one of which may have been "greeting" when the mate rather suddenly came closer.

This species certainly goes in for long descending gitches. But I think think that these are just a way of coping with strong winds.

One thing I noticed yesterday, but forgot to put down, is that the 2 birds of the pair will often look away from one another as they approach on the ground. These looking-away movements are far from being jerks or "fligs"; but some of them might be unritualized avoidance movements.

Still, it is quite remarkable how little overt hostility there is between the members of this pair. Probably less than I would expect in any other species. This is presumably connected with the fact that the members of the pair stick together throughout the year (as I imagine they must). But it may also be correlated with the general weakness of general gregarious tendencies in the species.

One of the birds (♂?) flies off. Doesn't return for a long time. When

albus, Feb. 17, 1956, II.

(284)

does, its mate goes into Gort before it lands, points bill at landing bird, and then goes back into Gort after the landing has taken place. The bird that has just landed stands in alert posture - Gort - alert posture - Gort - alert posture - Gort - alert posture, and then begins individual preening. The other bird just remains in Gort, looking quite "frozen", and then I see that it is half asleep, apparently (eye opening & closing) still in Gort. So I still don't know for sure that these Gorts are anything more than "coincidence" - although I think they must be, as they are so common in "nervous" and "greeting" situations.



Gort posture (sometimes bill is more like this, and sometimes more like this). Presumably the head is also sometimes higher - or else the bird couldn't Gort on level surfaces.

The birds just go to sleep after this, and I finally leave at 12 noon. The birds are gone by 2:00 p.m. But there is at least a single bird flying around the island most of the afternoon.

This species has relatively shorter, broader wings, and a shorter tail, than the Noddy. The difference in proportions is quite conspicuous in flight.

albus

Moto Nui,
February 18, 1956

I didn't have much time to study these today.

Two more bursts of "tik" like notes when the 3 usual birds are flying above me. I think that this must be put down as the "usual" reaction to a "potential predator".

Easter Island
February 19, 1956

Have been all around the coast of the whole island, looking for Grey Ternlets and Fairy Terns. (The only place we mined was the cliff right opposite Maria-Tiri, but the natives have assured

albus

one time & time again, that the (the Brown Noddy is found there). We have seen a lot of places where the birds are supposed to breed. Did I mention that most of these places looked extremely suitable? I did. I saw a single bird of either species 1/1. (An old native spotted having seen a skeleton). I hardly believe him. I think that the natives must be correct when they say that the birds come in March. Aside from the Brown Noddies and the few Fairy Terns on Mota Mota. I think that the only Lands in the region are the Brown Noddies and Sooty Terns which are supposed (according to Heyerdahl and the natives) to be on Mara-tiri now (presumably breeding).

albus

Little Island
February 17, 1956

One note about something I forgot to add to my remarks on previous days. One of the reasons I have seen so little in the way of ritualized hostile patterns on the ground (particularly postures) is that the birds almost always fly up in hostile intentions. When the 3rd bird flies toward the pair sitting on the ground, for instance, one or both birds of pair usually fly up to scream at, or attack, the 3rd bird. This aerial propensity may well be connected with the light weight of the birds — they seem to have trouble staying on the ground in the face of the constant winds on Mota Mota, under the best of conditions.

I also wonder if the Muffled Notes, used to solicit mutual preening, are related to the "purring" sounds of the Brown Noddy, which Murphy mentions as being used during "courtship" and ♀ FB?

Isparriso,
March 10, 1956

In slight change in the birds here.
Earlier, before the trip to Easter Island, (as far as I haven't
mentioned it before), Hump Gulls & S. American Terns were common
in the harbor, and Franklin's Gulls were not rare. Now the
Franklin's Gulls are very rare. In fact, I can only be sure
that there were some at the present.

Putofogasta,
March 5, 1956

I had an opportunity to look around the Bay this afternoon
but only, unfortunately, at rather high tide.

Grey Gulls are still common, but rarer than in late Nov.
& early Dec. 1955. Flocks on the rocks, but almost none on the
field. Mostly adults, still in more or less complete nuptial plumage.
Also young birds, and a few definite juveniles of the year.

All the Elegant Terns seem to have gone. Also did I see any
Franklin's Gulls.

A few Hump Gulls, almost all (perhaps all?) young birds.

at sea, south of Pisco,
March 4, 1956

Thousands upon thousands of Franklin's Gulls, usually in
smallish flocks, flying and apparently feeding among the guano birds.

La Punta,
March 11, 1956

Quite some changes in the birds here.

The only common species here now is Franklin's Gull. There are
usually a number (10-20 app.) resting near the station here.
Some young birds. But adults in more or less complete winter
plumage. Quite inactive, but I have heard a number of LCN's in

flight and complete r.c.'s on ground.

The only other species I have been able to identify is Grey-headed Gull (young?) that flew by in a great hurry.

I have also seen one juvenile Long Tarsus, flying in distance, but I couldn't tell if it was a Gull or a Pelican's Gull.

I am quite surprised to find no Grey Gulls or Pelican's Gulls around the station.

One point about behavior might be worth mentioning here. I noticed it in connection with the Franklin's Gulls here, but it is probably equally relevant to all species. None of the Franklin's Gulls here has given a Landing Call or an LCN upon flying up. This is probably correlated with the general low level of hostility in the group, and I think that LCN's upon flying up would be equally rare in any other group of "friendly" (i.e. not very hostile) birds of any other species. This is good evidence that the LCN's upon flying up are not general "frustration" reactions or the results of conflict between "inertia" and a "flying mood".

at sea, between La Puntilla and the Chunchas Is.

March 12, 1956

When we set off from La Puntilla this morning (around 7:00 a.m.) I saw the usual lot of Franklin's Gulls, one juvenile Baldie's Gull, one juvenile Kelp Gull, and one aced term in winter plumage (either *elegans* or *marina*).

Then, in the middle of Paracas Bay, we came across a large (possibly a 1000 birds, possibly twice that) flock of Swallow-Tail Gulls. Most of them were white-headed, (I don't know if there were juveniles and/or adults in non-nuptial plumage - but they all seemed to have adult wing patterns), but there were also a few adults in apparently complete nuptial plumage. They were all just sitting on the water.

I also saw one Gull, an adult in non-nuptial plumage, sitting near a buoy not far from La Puntilla.

Then, when we got to the Chunchas, I saw 5 or 6 juvenile

I forgot. There were also 5 or 6 Hummers
skimming near La Pantalla

(288)

Red-bellied Pigeons, mostly on the rocks near Churcha Norte

under

Churcha Sur,
March 12, 1956

Well — there are lots of birds here, but not quite the
right season. (One of the Guatemalans told me that the birds breed
there a year, laying eggs in November and May. This is not too
surprising, in view of some of Murphy's data.)

In any case (the birds here) and at the Quilestas and Churcha
Norte), seem to be just beginning breeding seasons. (The
Guatemalans said that they do not breed all year long.) The big
colony is more or less directed. There are lots & lots & lots of birds
resting on the rocks near the dock, and I did see some birds
make a brief visit to the old colony site this noon, (just like the
birds of the "small colony" in November)

The birds on the cliffs are quite active in displaying — at least
as active as the birds in the communal area last November. Lots
of hostile chit and Rarp performances. Also lots of Gait & St.
Just about as before — at first glance at least. No sign of any
great decline in intensity of reactions.

I haven't seen any real sexual behavior yet, but I have
seen several ♀'s begging, in H & R (wings not drooped) from
their mates. Apparently accompanied by usual call, but I could
n't actually hear it at my distance. (All this was on the cliffs
incidentally — I haven't watched any display at the colony
site as yet). None of these ♀'s got any overt response from their
mates.

I also saw the 2 birds of a pair land together on a ledge of
the cliff. They paraded around, in as near a circular parade as their
space allowed, in V (quite agg. looking). Then one bird went
into H (without R) and looked as if it were about to begin FB.
But neighbors intruded, and the birds were distracted into
threat. Too bad, because their parading looked very much like the
early pairing behavior of gulls.

One thing I did notice when this pair threatened their neighbors.
They did show a tendency to re-orientate their Gasts, turn

inca, March 12, 1974

ing to face toward their opponent

I have also seen some fully fledged young birds. I have only birds of the last breeding season. FB ing from adults. H&R (unmated) not changed, just like adult ♀'s. With definite FB call, short, rather high pitched, rather loud, whining notes. Bill opening & closing, but not too widely. These notes rounded just about like what I remember of the adult ♀ FB notes, but it struck me that they were definitely louder.

I might add another thing that struck me, (in case I forgot it in November. The Rasp sound, at low to moderate intensity, at least, is remarkably nasal.

I have, of course, been looking like mad for aerial displays, particularly high flights. The only thing I have seen is something like a pursuit flight.

This involves 2 or more (up to 6 or 7 sometimes) birds fly very fast, with wing beats of very great amplitude. This is not a real Butterfly flight most of the time, (there may be brief traces of a Butterfly flight by one or more birds for a few feet, but I am not even sure of that); there is no "bounce" after the down stroke, and I think that the wing beats are more rapid than in the Butterfly flight. There is considerable twisting and turning during the pursuit, but this is probably less extreme than in the most extreme erratic flights. There is no doubt that the pursuer(s) are following the twist of the pursued. These pursuits are always very low over the water, the birds showing absolutely no tendency to rise. They are often long-sustained, lasting half an mile, at least.

I have only seen the beginning of one such flight. A solitary bird flew around near the cliffs, with the wing beats typical of a pursuit flight. Within a few seconds another bird started in pursuit — and they were off.

I should add that all these pursuit flights I have seen were more or less straight, aside from the relatively slight twisting and turning. This sort of thing:

There is a definite tendency for more & more birds

March 12, 1956, III

(290)

to join in (at the tail end) of such flights.

I have seen the lead change several times in some short flights, but this was during the shorter flights, and I am not sure that such changes do not precede the approaching end of the flight.

I never saw the end of the long flights; because the birds always flew into the sun.

P.S. A word of caution. Although I have been using the term "pursuit flight" quite liberally, this may just possibly be unjustifiable. The birds I saw may have been flying out to sea to feed, and nothing more. Still these flights were remarkably rapid & evasive, much more so than the normal flight of birds flying around the cliffs; and the wing-beats were certainly unusually deep. So I think that these flights must, at least, have contained some hostile, pursuit, elements.

Chincha Sea,
March 13, 1956

The birds just land on the old large colony site around 8:45 a.m. Quite a lot of them, but many fewer than there were in the old colony at the time of its heyday. Much disputing between pairs, many silent Rums, etc. Just as usual, in these circumstances, in fact.

This is just about the time when the tide is becoming moderately low, which may or may not be significant.

I get in the blind 9:03. Birds panic of course. But they come back almost immediately. They also panic again & again almost immediately, but this obviously has nothing to do with me or the blind (some of the panics started by distant birds).

All gone again now - for quite some time 9:15. I.E. all gone, except for groups on rocks in water.

Back in colony area again 9:40. This time I get a fairly good view of what the birds are doing, and it is disappointing, routine and ordinary. As the birds land, there is a great burst of Chit, by both birds in air and birds on ground. (The burst of Chit

unca, March 13, 1967

is also heard when the group is together, one of their immen-
sible Silent Panics. I have heard at least 10 in various cir-
stances this morning. When mates land together, they perform
the usual MC pattern (i.e. either the Gort & St & parading or
V complex, or the Chit pattern - usually followed by Gort & St & V
etc.). They may also go to Chit in F in a potential nest-site.
(this may be done by one or both birds of pair). Apparently
single birds (presumably mated birds without their mates)
do less. but I have also seen one of these birds go to a poten-
tial nest-site and Chit in F all by itself. The trouble with fol-
lowing all this is that all the birds, both mated and apparently
single are constantly involved in disputes with neighbors.
These disputes take the usual form; e.g. redirected mutual
Chit in the case of mated birds.

One thing I have noticed is that there seems to be relatively
more parading now than in November, i.e. mated birds walking
around in V, with many HF's (slow, as usual), and almost
always now, some definite titting.

A silent Panic, large & prolonged, 9:50. Just after the
birds have just flown up I hear a remarkably high-pitched,
loud, screaming sound - involving at least 6 or 7 notes.
Followed by a few high-pitched "tuk" like notes. This was
almost certainly given by one of the terns. but it is something
quite unlike anything I remember hearing before.

The birds left with this panic, and haven't come back yet.
10:50. Back again, off and on, with a burst of panics, 12:00 noon.

I have been trying to draw the birds, and I have noticed
one important detail. They look much thinner, smaller, bodied -
with relatively larger head and longer neck - when they are in
display postures. This is presumably due to the position of the carpi
and wings. Also due to the fact that scapulars are smoothed down
flat in most of the displays. In repose, the birds look as if they had
large and "lumpy" bodies.

It is peculiar, but I have noticed that a panic on the
rocks on which they are resting is often the apparent stimulus send-
ing the birds on one of their periodic visits to the colony site. It
looks as if the panic were necessary to overcome their "inertia".

(One little component of their "chit" is certainly "ch" - standing on the edge of the water - presumably because it is just from water.)

Have seen several more cases of "attack LCN" before actual strike attack - and Moth Flight & st after attack (these are the only cases in which I have seen either the actual st or the Moth Flight).

In the chit occurring on the rocks, and probably all chit, the bell definitely comes between syllables.

Have seen several more cases of apparently high intensity FB or soliciting. H & S. (wings not drooping). I am almost certain that this is not a true and not begging. One I kept backing into her mate, just as if she wanted him to mount - then I saw I have seen one clear V & chit patterns.

Moth Flight begun just before attack!

p.m. Watching birds on cliffs, not from birds

Saw my first fish-camper of this trip. Solitary bird landed on rocks, stood in usual FO, fish tail dangling. No landing provoked a really unusually large burst of chit from all the birds in his neighborhood, (this was quite striking!). Otherwise no response - nobody approached or joined him. Finally he flew off to another cliff, where he was lost to sight.

Have been watching a few more "pursuit flights". As far as I can see, all the birds involved in such a flight are in the "normal" "relaxed" flying posture. I saw the beginning of one "pursuit flight". Bird circling around, by itself, near cliffs, in typical "pursuit" type of flight. Then another bird flew past. The first bird flew after the second, caught up with it, passed it, and a typical "pursuit flight" began. Lasted a long time. The second bird following the slight twists and turns of the first.

Have just seen a bird make a little cicalas flight in aerial ft. plus "relaxed" wing movements.

These birds on cliff give chit as Silent Plover declines.

Can confirm that birds during "pursuit flights" are in normal flying posture. Can also confirm that they sometimes fly in Butterfly flight a few seconds (Must explain in more detail exactly what the differences are between Butterfly flight and "pursuit" type flight).

Wca. March 15, 1971

291

The Butterfly flight was a series of small, rapid, flap, there is a pronounced pause after each downstroke, and the bird as a whole moves slowly. During the pursuit-type flight the bird flies very fast, the downstrokes may be as deep as those of the Butterfly flight but they are more rapid, there is little bobbing (although the flight does seem both more powerful, definite, better out) and it is noticeable that each stroke carries the bird a long way forward.

The few "pursuit flights" that have flown near me have been silent.

And now — a few more words about these "pursuit flights" in general. I am still not sure that they are really a hostile pattern at all. I watched flocks of terns flying in from the open sea early this morning, presumably coming back from fishing, and all the birds in such flocks were flying in a pursuit-type flight. This type of flight is probably no more than the "usual" way of flying rapidly. There are still, however, some indications that some of the "pursuit flights" are something special: i.e. the twisting & turning, the occasional Butterfly intervals, the way in which a solitary bird will circle near the cliffs until another bird joins it and the "pursuit" can begin, and (perhaps) the frequency with which only 2 birds are involved (perhaps also the way in which other birds are attracted to join in the chase).

Have just been re-reading my November notes, and I see that on Nov. 16 I was still worried about the status of *clit* as an aerial call. I must re-emphasize therefore that I have repeatedly heard bursts of *clit* by all the birds in flocks flying around as Silent Panic. This happened at least 3 or 4 times today. (The fact that *clit* is the common call given by birds now after parading from communal areas on cliff, while the LCN was the common call in November, when the birds were parading from the colony, might be good evidence that LCN - Parp is higher intensity than *clit*.)

Chuska Sur,
March 12, 1956

Clouds move in into old colony site, 12:15 a.m. I watch them from top of cliff for a while.

Toto of the preceding going on. Have several times seen the pattern changed in different sequence. St - Gost - V (singing) - song - to eye - ... and 145, an averted head, bill ... revealing "back of the head". This seems to be one bird ... the other, may be done in ...

... that ... initial reaction ... by a bird landing near others.

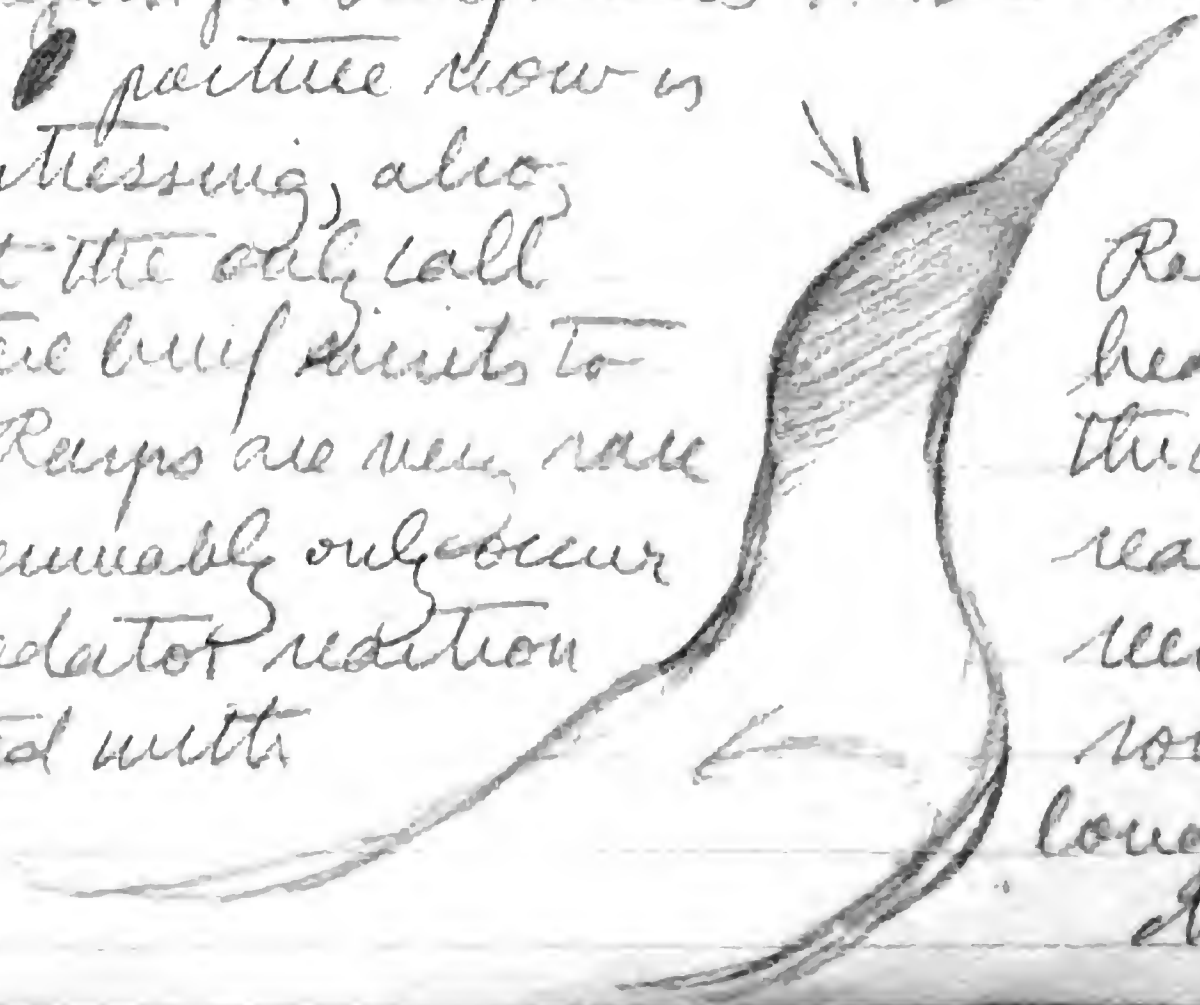
There is some potential nest-site prospecting on the cliffs far away from the colony site. Just the same as in the colony in November. Constantly interrupted by circular flights, by one or (usually) both birds of pair, as well as by panics. In one case, one (at least) of the birds of the pair flew in aerial St, ordinary wing-beats, during a circular flight.

Enter blind 8:15. The birds don't seem very alarmed (or no more than usual). Come back quickly.

Again impressed with the fact that V or O with extreme G is very much an alarm reaction. Just done, for instance, by a bird that saw me in the blind).

Of course, the birds finally leave for the rocks almost immediately, but they are back again for brief visits 9:25 a.m.

The usual posture now is flight be worth stressing, also, that this is almost the only call heard during these brief visits to the colony site. Raps are very rare indeed. I and presumably only occur as a potential predator reaction perhaps associated with the panics).



Notice head shape. Rather rounded. The head seems to be the chest toward the rear. Length of neck seems to vary, (it is sometimes slightly longer than in this drawing).

inca, March 11, 1955

(295)

Birds gave again almost immediately. Thinking it over, it is no wonder that I haven't been able to see much in the way of possible pair-formation. In a sedentary species like this, the members of the pair presumably stick together all year round. (And I might add that most of the birds I have been watching this trip, even on the cliffs far from the colony, have been obviously paired). And when one stops to consider that most of the birds probably visit their breeding territories almost every day between breeding seasons, it seems remarkable that I have seen any pairing behavior at all. The pairing behavior of this species might almost be considered obsolescent or vestigial.

And the habit of visiting the breeding territories between breeding seasons may be correlated with the absence of direct long-maintained territorial disputes in the species.

Most of the birds in the flock now are molting their secondaries. I can certainly confirm the fact that this species has relatively more panics than any other I know. But I wouldn't say that the birds in the communal areas now panic more frequently than in November. I wouldn't even say that the birds in the colony area panic more often than they did in November — it is just that they don't come back after most of the panics now.

Before I forget, I should note that the tide was moderately high when the birds first came to the colony this morning.

Particularly dull this morning!

Some of the "Alarm Chit" notes are louder than normal "Chit" notes. But this is certainly unusual.

After leaving the blind, we passed a bunch of terns on the rocks. Outburst of Rarp notes and Chit as some of them flew up. One juvenile (this year) stayed on rocks, gave a burst of juvenile begging notes facing directly toward us in the boat, almost certainly "meant" for us. He gave these notes from a posture like F, with HB, but this was rather different from the "usual" form of these patterns. (In case I forgot to mention it yesterday or the day before, all the juvenile begging I have seen was accompanied by HB just like that of adult ♀s.) This juvenile wasn't in real extreme R, although his scapular & back feathers were certainly raised quite a bit — so that his whole back looked "swollen" but not too

inca, March 14, 1954, at

(296)

not so. But the HB was by far the most violent & extreme that I have seen in this species. At the end of the down-beat he was always in a perfectly conventional F, but he went way up in the up stroke, reaching a posture about like this



hostile posture.

This incident is good evidence that the juvenile "begging" is also a rather than a "friendly" one.

Watching cliff in the afternoon.

Another bird landed on rocks with fish-tail dangling from his bill. Just landed in the same spot, just west of Chit, mostly from F. I saw his neighbors. He also responded by flying off to another cliff, where I can follow him.

Again back, as before. This time a juv. tries to get fish by begging. I won't allow it. ♂ is finally attacked by neighbors & flies off.

Oh dear! ♂ back again, same place. Same Chit response by neighbors. But this time the juvenile does manage to snag fish, (and ♂ apparently "allows" this). Then all the neighbors fly to attack both ♂ & juvenile.

Another view of a ♂ sitting on rocks in FO with fish-tail dangling. In a rather isolated spot. Getting no reaction at all, of any sort, from anybody. Sits about 5 minutes. Then flies off to another cliff. Back. Sits in old spot again. Off again. Just like November.

Got a good view of FO posture this time. A few points worth stressing. This is a posture in which the head is rounded and looks relatively very small, (almost no back to it). The body (i.e. wings) looks relatively very long & heavy. At one time during this incident the ♂ had his wings actually drooping, (while the carps were just visible).

Apparently another ♂ with fish. ♀ blends him. ♀ does Chit in F, walks away in V (agg.), down HF as she pines near ♂, then burst of Chit in alternate I and II, then begs in H (without R). Then ♂ flies off to another cliff; ♀ follows after a pause.

Have been watching one ♂ fly from place, visiting at least 3 different spots, some of them repeatedly. Getting no response from anybody, except from juveniles, who FB in H+R whenever they see a fish. I paid particular attention to the flights of this ♂ as he went

from place to place. This flight is perfectly normal and I showed almost no tendency to circle, went directly where it was directed. Didn't even seem to try to fly past likely looking prospect (i.e. solitary birds which might also be unmated).

Just watching another "pursuit flight". One bird flying alone in pursuit-type flight. Then starts to chase another bird flying near by. Then both off in pursuit-type flight, going round & around in very irregular circles, much twisting and turning, the lead changing time & time again. They finally land on a distant cliff, yards apart from one another. Then one flies even farther away, into a cavern, and I lose it.

I might note, before I forget it, that these "pursuit flights", if that is what they are, are quite unlike the brief aerial chases I have seen, now & in November, in connection with aerial fights in the colony. The latter, so far as I can remember, were all in normal flight (much slower than the "pursuit flights"), and/or aerial ft. Mott. Flight, etc. Also much, much shorter.

A few more remarks about "pursuit flights", (this is getting to be perfectly endless & pointless). I am becoming even more convinced that most of what I have been calling "pursuit flights" are nothing of the sort. Just normal fast flight. It is significant that almost all of these flights are directed toward the fishing grounds. And I have seen lots of single birds and groups of birds flying back from the fishing grounds, or between distant cliffs, in pursuit-type flight. And even the traces of Butterfly flight in these flights are probably not ritualized, much less extreme than the real Butterfly flight. They are probably just "coincidence", i.e. a matter of aerodynamics. I still think, however, that some of the "pursuit flights" I have seen have contained brief traces of hostile unritualized chasing — but nothing more. If these chases have involved mates, however, (and I think they have), what does this imply?

There is no doubt but that there is some low-intensity "sexual behavior" going on in the group now. This makes it all the more significant that I haven't seen any Fish flights or High flights.

Have seen no response of the terns to Belcher's Gulls flying by.

Cherula Bay
Feb 12, 1956

... down into the colony area and ... the cliff.

They ... usual ... pairs, etc. But I saw only a few ... earlier account. The ... to ... of the apparently single birds ... for the nests to show up. They ... discovering potential ... against intruders. They do not usually go through ... of mutual displays which might be an important element in pairing. They just go through the usual displays involved in almost all "greetings" between mated birds.

There are apparently very few "seekers" in the colony now. I have only seen one or two possible ones, and even these may have been setting down than mated birds looking for their mates. In any case, these possible seekers got absolutely no response from any one, except bursts of furious Chit from their neighbors.

Similarly, I have seen only one fish-carrier in the colony. He went through the usual behavior, half-stupor as usual. He evoked the usual loud burst of Chit from all the birds around. (There is no doubt that a bird carrying fish provokes much more hostility than a bird not carrying fish, in comparable circumstances, at least.) Answered this hostility with a little Chit from F. of his own. Flew from place to place several times, each time in perfectly "normal", relaxed, direct flight. No response at all by any possible potential mate.

The fact that I have seen only one fish-carrier in the colony, and so few possible "seekers", would seem to suggest that most of the "early pairing" that does occur in this group takes place on the rocks and cliffs away from the colony site.

I have seen one or two circular flights by apparently single or obviously mated birds in the colony area. There is no doubt but that these are impressively rare now. And always quite silent and unritualized.

unca, *Spizella monticola*

One interesting case of violent hostility seen today. One (♂) small bird attacked another (♂), clamping its beak and hanging on. The latter bird finally managed to wrench itself free. It was retreated a foot or so, did a few U-shaped arcs with head oriented forward. Then both birds did mutual O-shaped performance, facing one another. Then both flew.

The only thing I have seen in the way of ritualized aerial behavior in this colony now (aside from calls), all the verbal aerial it's with or without flight, by the attacker and/or the attacked bird after aerial attacks.

One descriptive note. I have just seen one bird, close up, with a bill even broader than the one I drew in my principal sketch of age 1.

Another example of aerial Rapp from a slight "hanging" posture. This time with perfect normal wing-beats.

Well - another type of pursuit flight! Some aerial fight, but along time, the birds landed on water from time to time to continue the fight. Finally, one flew away. Winner follows, flying about 5-10 feet above the loser, and a foot or so behind. Both birds flying in rather "labored" flight, slow, deep wing beats, not at all buoyant (and thus a far from the Butterfly flight as one can get). Both silent. Circle irregularly, rolled & round. Then the pursuer makes a series of short flying swoops toward pursued. The latter evades by plunging slightly downward & sideways. The pursuer then rises to his more or less original position by a short flying soar. Both these swoops & soars always unorthodox. The pursuer must have done at least 3 swoop-soars, interspersed with brief periods of chasing (like that preceding the first swoop), while the birds were still in flight.

I have also seen a couple of brief cases of what may have been a slightly different kind of pursuit. Two birds involved. Flying rapidly, but less buoyantly, and with less twisting and turning, than the birds in the "pursuit flights" I have described on previous days. Unfortunately, I didn't catch either the beginning or the end of these apparent chases.

Both types of pursuit flight seen this morning were apparently quite unorthodox.

Birds resting down now, 8:50. It's hot as hell!

The birds have always left the colony for the last time for today, around 12 noon. This was true of all the preceding days before today.

The vocal posture from which the flying birds give their "Rarp" now is quite overagitated; neck stretched forward a little, head more or less horizontal, bill perhaps inclined very slightly downward.



This is probably the same posture from which they often give aural Chit.

Brief aerial chase after long, sustained flight on ground. Both birds in slight aural Chit, and flight is not high. Both flight. Pursuer soon gives up.

These birds are now after give "Rarp" as silent "Rarp" declines still, I think that even here Chit is as common as "Rarp" now.

Although most of the inside of the mouth and the base of the tongue are a not-very-bright yellowish-flesh color, the distal half of the tongue, the part that shows in some G's, is bright red, the same color as the outside of the bill. And I might add that I have seen several more G's, bill quite wide open, in which the tip of the tongue was raised & quite conspicuous. Such G's are obviously a version of O+Rarp, given from the usual O or semi-V semi-O posture. But they seem to be produced by relatively stronger escape drive, given by birds which seem to be more anxious than birds giving loud Rarp. All these G's, incidentally, were directed toward me.

I must add that the one bird I saw carrying fish in the colony area was operating in the part of the colony, really a small isolated separate colony, nearest the communal area cliffs on which many other birds were roosting, preening, etc., at the time.

Now some real "aural" behavior on a cliff far away from the colony. A male with fish, standing in F-D. A female hovers him, does Chit from F toward him. He does some "silent" Chit from F back at her. Then A does several little circular flights, quite unritualized. Each time he comes back with fish still in bill. Each time the M.C. is Chit from F by A, "silent" Chit from F by A. (The q is a little "bothered" by the presence of neighbors, turning to Chit in and toward them from time to time in the midst of the M.C.) Then q does a little circular flight, quite unritualized. Upon her return, she does V+HF, while A does

"silent" chit from F. Then both off on circular flight, σ just following her in flight. Both birds flying in an unritualized manner. σ back first, while ϕ does a few extra circles. ϕ backs, lands on rock below σ . σ bends over to her repeatedly, in a sort of exaggerated L posture, doing "silent" chit and also audible chit from time to time. σ does this time & time again, with long pauses in between, while he stands tall & stiff in FO. The ϕ 's response, whenever he bends over to her in L, is begging from H or H & R. Once she tries to seize fish, but he won't let her. This goes on for about 15 minutes. Then ϕ off on little unritualized circular flight. Back, lands on ledge right beside σ . M.C. of audible chit from F by σ , V+HF by ϕ . Then ϕ begins begging in H. σ deliberately turns away from her so that she can't get at fish. ϕ gives up, starts to preen. σ off on circular flight, back, lands at place just above ϕ . He begs from H, briefly, as he flies past, then goes back to pr. σ just stands in FO at his new spot. Then off on another circular flight. Back beside ϕ . ϕ FB in H & B. σ nothing. σ off on circular flight. Back beside ϕ . ϕ chit from F, σ nothing. ϕ begins FB in H, rings tail of fish, and a temporary tug of war ensues. σ does "silent" chit during this. Finally, still tugging, both birds fall off ledge. When they come back, it can be seen that the σ is still holding most of fish in his bill, while the ϕ is holding the tail of the fish in hers!! ϕ swallows her bit. Then this whole process continues a long time. At least 4 circular flights, 2 involving both birds, 1 the σ alone, 1 the ϕ alone. M.C. each time one or both comes back. The σ just chit (both "silent" & audible) from F. The ϕ usually chit from F, once chit from σ and ϕ . When she returns from her own circular flight, however, she does V+HF. Once she tries FB in H, but the σ , still holding fish in bill, turns away from her. He gives up and starts to preen. σ then starts to swallow fish, actually does so several times, but coughs it up again & again. Finally swallows it down apparently for good. σ stands peacefully beside ϕ as she continues to preen. This whole incident lasted at least a half hour.

This is the best (almost only) case of mutual "sexual" behavior I have seen this trip. And probably a very good example of moderately early pairing behavior. The reluctance of the σ to give up his fish, while constantly dangling it in front of the ϕ , was particularly interesting. And so was the fact that there was no ritualized aerial behavior.

unca, March 15, 1956, IV.

(302)

||| interspersed in the procedure!

||| I have seen absolutely no trace, this trip at least, of anything
||| resembling sexual preening between partners

La Puente & Chucha Sur,
March 15, 1956

Just as the sun about gulls in general in the neighbor-
hood here.

I saw 1st (4 or 5) ... gulls from time to
time around the ... The ad-
ults were in complete ...

The huge flock of Swallow-tails was still in Pinaras
Bay around 1:30 p.m. today.

I have seen one Grey Gull, an adult in winter plumage,
at La Puente since my return.

The Shrikes seem to have gone.

The Franklin's Gulls are still here.

And I have seen 2 adult Grey-headed Gulls, one in
complete nuptial plumage, and one in complete winter plumage!

bulcheri

Chucha Sur,
March 15, 1956

None of the adults seem to be at all active now, except
for the fact that they give frequent Long Calls on the ground. I
looked & looked, but I still couldn't find an adult giving
Long Calls in the air. The nearest thing was a Landing Call, a
series of 4 or 5 LCN notes, getting progressively shorter & deeper in
pitch.

cirrhocephalus

La Puente,
March 15, 1956

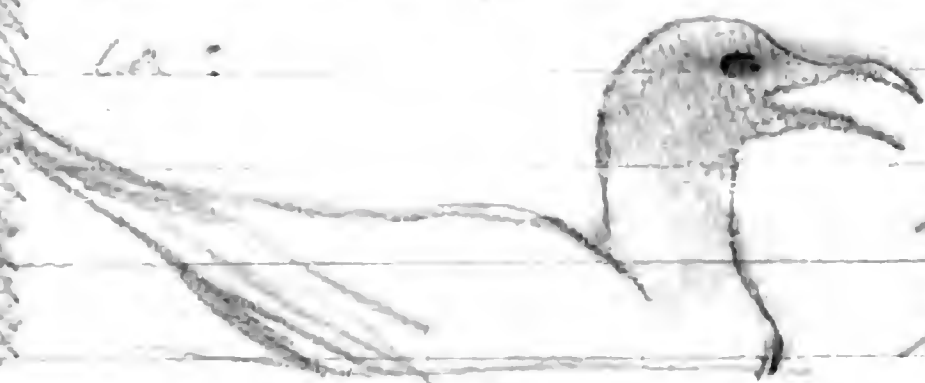
I saw the adult in complete winter plumage give several LCN's
from an O posture in which the head was at least as horizontal as in
Hartlaub's. (Unfortunately, however, I couldn't see the neck).

June 1951

June 1951

The flock is still here
As a result of some of the previous observations, I can say the following about the

It is a very common sound in the winter for
Ratchets followed in some cases by whistles. The latter could
be:
More of a V than an O. These birds were in
complete or almost complete nuptial plumage.
These Ratchets sounded just like the ones I
remember in Florence.



The most surprising thing I noticed in the sounds given by
birds flying by the boat or land, flying up from water as well as from the
single birds, sometimes repeated. Sound was like the LCVs of
Bonaparte's Gull. A kind of twanging note, much buzzy, per-
rattle - or, than the Ratchet. Might be a sort of a warning re-
action. I am fairly certain that I have heard both young and adults
in winter plumage give this note, but I am not sure about adults
in largely complete nuptial.

The whole problem of the Whistles here is rather more comp-
licated than I expected. They are certainly some perfectly good whistles
given by birds in this group. All or most of them are like the sound
like in sound. Rather plaintive. Could almost be translated as some-
thing like "When". I am not sure that the Whistles of the birds
at Florence were so plaintive and shore-bird-like. It may be
that the Whistles here are slightly different, as the birds are but of
reproductive condition. But there are also other Whistles in this
group. Some seem to have a Ratchet or rattle undertone, a sort of
- - - underneath the Whistle. Others are fluctuating or bub-
bling, having a ~~~~~ quality. One of these latter types could al-
most be transcribed as "Ja - whee - a - whee" / I have heard
this several times, once at least by a bird taking flight.

I should add that some of the brief, plaintive Whistles
sound almost like the FB notes of juvenile Franklin's Gulls.

This species looks quite round-bodied-headed. Looks sur-
prisingly like nothing more than a large Hydrocolous gull, a large

... of "Whistle" ...

... sleeping quite peacefully ...
... and Whistle are closely associated. Whenever there is a burst of one there is a burst of the other. And when there are associated ... single call is apparently always one Ratchet followed by one Whistle, and the Whistle is always one invariable, ... In other words, the various ... only when there is no ...

... have quite a lot of black on the primaries

... give brief Whistles, sort of "Peep" sounds. ... Also equally brief notes intermediate between Ratchet & Whistle. Also, apparently, brief Buzz Notes (but such sounds are much less common on the water than in the air). Also brief Ratchets, (somewhat longer than the brief notes mentioned in the preceding 3 sentences), without any trace of succeeding Whistle. The brief "Peep" Whistles seem to be far the commonest.

Can confirm that the Buzz Notes are the usually round given by birds just after flying up. Have heard them again. Usually 1 to 3 notes; (when there are more than one note, there is usually a pause between successive notes).

The actual Buzz Note is certainly not given from any ritualized posture. I don't think that the neck is even stretched forward, except when flying up or alighting, when it is stretched anyway.

I have now just heard a Ratchet followed by a "Ja-where-a-where" Whistle!

Cannot overstate the degree to which the Buzz Note resembles the LCN of Bonaparte's Gull. If I closed my eyes, I would think that I was in a flock of Bonaparte's Gulls.

Birds flying near the boat, (and I haven't watched any other flying birds), are particularly apt to preen themselves, on the breast or belly, or scratch the side of their heads with their feet. They are much more apt to do this than any other species of gull I know. This is so.

common & conspicuous that I would call it a "displayment activity" produced by several birds about our presence.

The actual length of the Buzz Note seems to vary considerably. Most are very short but a few are quite long.

The dark eye patch of the birds in nuptial plumage does not usually show much trace of the red eye-ring. The red is obviously much darker & duller in non-nuptial birds. The species looks almost white-headed in this plumage, having quite a distinctly grey neck.



Birds flying up from the boat may also give a few Peeps as well as, or instead of, the Buzz Notes.

Some of the Buzz Notes are warbling, just like some of the LCN's of Bonaparte's Gull.

I have heard occasional notes almost exactly intermediate between the Buzz and the Patchet, (by a bird flying up from boat, in at least one case). This would tend to confirm what I already think, i.e. the Buzz is very closely related to the Patchet, perhaps little more than a particular variant (low intensity? less aggressive?) of the Patchet.

Some of the longer Whistles might almost be transcribed as "Wheree-ups".

All the cases of real high-intensity mutual threatening, i.e. real Patchets & long Whistles, often repeated. I have heard or seen this morning occurred quite early, i.e. before 8:00 a.m. Now, 9:35, the birds are very dull, doing nothing but the apparent lower intensity notes, and/or single long Patchets and/or Whistles.

Some of the aerial Buzz Notes seem to be accompanied by slight opening & closing of the bill, but others are certainly given with the bill entirely closed throughout. Some (perhaps all) of the Buzz Notes on the water are also given with closed bill. And the same thing seems to be true of the Peep Whistles, (at least, I can never see which bird is giving the Peep, even when I can localize it down to a very few nearby birds).

Most of the birds I have heard giving Buzz Notes have been in non-nuptial plumage. But I have just heard a bird in complete or almost complete nuptial plumage give a good series of Buzzes on water. These were perhaps somewhat harsher than most Buzzes.

but they were not really transitional to the adult
 Buzzes or Peeps on the water are given from a
 stretched posture.

Notes in Peep in the air.
 I must add that I certainly the birds in non-nuptial plumage
 have been much more "peep" and more "whistle" than the
 only birds I have heard giving complete and repeated long Ratchets and
 Whistles have been in complete or almost complete nuptial plumage. But
 I would be surprised if all the birds could give any of the calls. It is
 probably just the relative frequency of the calls that varies in the different
 stages of plumage (and perhaps in different stages of the season
 also).

I have heard more intermediates between Buzz & Patchet by
 birds on water.

The wing pattern underneath the wing looks just the same
 as above the wing, except that the grey proximal triangle is much
 less distinct, (I think that it is only visible because it shows "through"
 the wing).

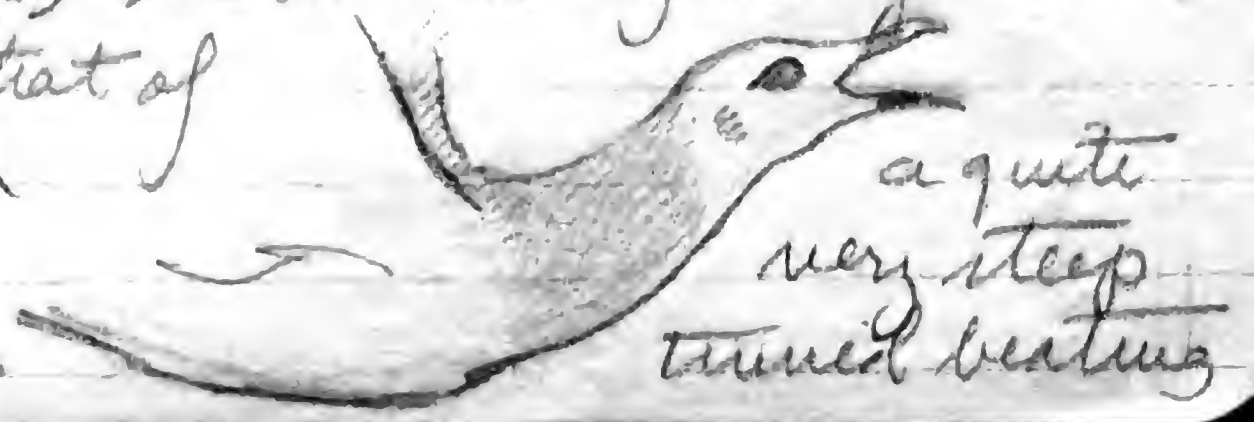
One of the sounds I have heard fairly frequently in the group,
 probably given by both birds in air and on water is a brief double
 note, each short syllable of which sounds as if it were intermediate
 between Buzz & Patchet, although probably more like the former.

An immense burst of Buzzes as the whole flock is put up by
 the sudden appearance of a Jaeger. And a few Peep Whistles and
 longer Whistles, (starting a little later than the earliest Buzzes).
 Thus the Buzzes might almost seem to function as an alarm call.

Complete Patchet and long, wavering, Whistle by adult
 in complete nuptial plumage flying up from boat.

The Peeps tend to occur in bursts (much more so than the
 Buzzes) but there is always a distinct interval between notes.

A bird in complete non-nuptial plumage flies up near me
 (but probably not frightened by boat - it had been floating perfectly
 happily nearby for about 5 minutes). The interesting thing is that
 it gave a long Ratchet (quite like that of
 the adults in nuptial plumage) from
 extreme, long-necked, but not
 aerial posture. The wings con-



a quite
 very steep
 turned beating

throughout the note.

Although the birds in complete or nearly complete initial plumage make up a relatively small proportion of the total flock (probably less than a fifth) they are actually not uncommon.

Colaptes niger ?

La Brea, California
March 16, 1926

Suddenly a lot of these birds have appeared here. Over 200 resting by the station.

Not very active, but the commencement of ritualized hostility is a sort of silent growl. Very frequently when there is rumor or jostling in the crowd. Quite tall & long-necked.

Obviously threat, and quite effective as once seen a bird clatter its bill from such

There is also a call given from
Made up of several notes, I think;
ult to tell exactly which
which in -

the birds are all
a tight little flock

call usually includes many more than 2 or 3 syllables, and it is also possible that many of all of the birds are all uttering one note. Each note might be roughly transcribed as "Kow" or "Kah".

This call was particularly common after the birds had landed from a silent panic, and there was a terrific jostling going on. It was at this time that the call was given from the most extreme posture.

Another loud burst of this call was given by the birds when they flew up in a "Silent" Panic. I don't think that these aerial calls were accompanied by any ritualized movements or postures.

I have seen several silent panics already, and they have the usual larval form.

There is also a single note, often uttered by single birds flying near me, but not obviously alarmed. A sharp "Kow", so sharp that it is almost a "Kek". Often repeated, but with quite long intervals.

Given

such. I have
a posture
this posture.

(It is very difficult -
birds are giving
individual notes,
packed into such

it is possible that the

I posture

crack between notes. Not accompanied by whistled movements or postures.

I suppose that all these sounds are the ones that have been claimed as "puppy" but they don't sound very puppy-dog-like. More puppy-dog-like than I remember the Phalaropus on the coast of New Jersey.

These birds obviously belong to one of the Phalaropus species, gray underwing and gray back and small. They also seem to be in intermediate plumage and quite a number of them have white "collars". Does this mean that they have just finished breeding?

I should also mention that the sound I have heard it, is much more reminiscent of the Pipixcan - Pipixcan gulls than of the Phalaropus.

There are at least one or two birds in this group which appear to be birds of the year.

curthoushalus

La Puntilla,
March 16, 1956

About 6 birds here today (2 in complete nuptial, 2 in complete winter plumage, 2 intermediate)

One of the birds in complete winter plumage several times gave a few LCN's (2-4) in H+R toward other birds of the same species (once a flying bird, the other times a bird on ground). Pattern reminiscent of the Arctic Gull in the Lima Zoo.

pipixcan

Paracas Bay,
March 16, 1956

There were large flocks of this species on the water today, moving about repeatedly from place to place. These flocks were very noisy, both on the water and in the air, nearly constant LCN's and a great many L.C.'s. I imagine, from the general sound, that a good deal of pairing was going on out here in the bay. (Which makes a great contrast with the behavior of the birds near the station at La Puntilla. The latter have shown no sign of any pairing at all. And, in any case, the latter are very stolid and inactive, and relatively

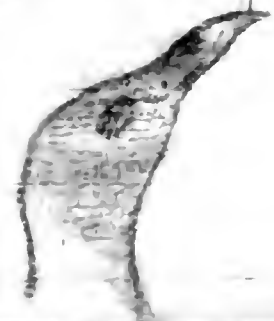
adult. I have certainly never seen the birds at ...
 give anything even remotely approaching the quantity of calls
 given by these birds in the ... All this is interesting, but one
 that these birds have already acquired their predilection for an
 "aquatic social life" a great extent, which is, of course, very cha-
 racteristic of them on their breeding grounds. The most interesting
 thing that the birds did, however, occurred when they were flying.
 Then, when a lot of birds were in the air, more or less together, but
 quite far apart — not at all like the tight flocks of Silent Plover,
 flying usually quite high in the air, some of them would go
 through numerous spectacular erratic flight patterns, sudden
 steep long downward plunges, exaggerated twisting & turning,
 etc. Although several birds were usually doing this at the same
 time, they didn't seem to be reacting to one another. This was
 certainly nothing like a Silent Plover, (not only was the flock loose,
 but there was no potential predator anywhere nearby — our
 boat must have been a quarter of a mile away, at least). And
 the birds performing these exaggerated erratic flights were usually
 uttering a lot of ICH's at moderate intervals. I saw one bird
 interrupt its erratic flight with a perfectly characteristic and
 extreme flying swoop (x PCC) and gliding soar. This whole
 performance was very reminiscent of the B.L.G.'s at Ploverglass &
 the Bonaparte's Gulls at Dog Lake. (It should be noted, however,
 that although the erratic flights of these Franklin's Gulls were
 quite as exaggerated as those of the Bonaparte's Gulls, in distance
 covered, speed of flight, etc., the Franklin's Gulls were a little
 less agile than the Bonaparte's Gulls, their twists & turns being
 a little less frequent & sharp.)

furcatus

Plover Bay,
 March 17, 1956

Same group of birds, still as inactive as ever

I have seen one adult bird, swimming slowly toward a group
 on the water, several times stretch its neck slightly upward,
 vertically, and point its bill quite strongly upward, diag-
 onally. Looked almost like a St. (But don't emphasize,




again that the birds were hardly stretched beyond more than in the normal airily, unassuming posture. I have actually seen a bird, do this one, in complete summer plumage, did it repeatedly, the other, in complete winter plumage, and did it twice. I have also seen 2 other birds, one in complete summer plumage and the other in complete winter, do the same thing - but accompanied by a pronounced lateral head-shake. I am not sure that either of these patterns can be called display, but they looked rather like it.

A bird in more or less complete summer plumage did complete long Ratchet & Whistle just after flying up, and there too was an incomplete aerial Oblique. I have also seen a bird in winter plumage do the same thing.

Quite a number of birds appear to be present.

This species looks quite plump - I looked in flight - has a definite boom - with a long elegant tail.

Some of the aerial Buzz Notes seem to be accompanied by a very slight opening of the mandibles, comme ça:  Nothing more.

We have seen a great deal more of the scratching and preening in flight, also sudden brief shakings of the wings (a quick, vibrator up-and-down flutter), but I am not sure that this is done more frequently by birds near the boat than by birds far away.

I have just seen a bird, in complete winter plumage, stretch its bill up, in alarm - It, apparently, toward a bird flying close by overhead.

Cannot overstate how much the Buzz Notes are the commonest sounds in an inactive group such as this. The Buzz is obviously quite a low intensity pattern. And it is heard almost constantly in group now.

The head of this species is very flat, viewed from behind.

The same flat, and occasionally accompanying head-shake, do not seem to differ from the corresponding autochthonous comfort movements, in physical form. And, of course, they may still be nothing but comfort movements themselves.

The aerial wing-shaking seems to be the commonest of the (possibly "nervous") comfort movements by flying birds.

I have now seen and heard several other cases of birds flying up (not from boat) with long Ratchets, (sometimes 2 in row). Always given from extreme aerial O. And I have also heard & seen a number of birds flying up with notes intermediate between Ratchet & Buzz. These birds weren't flying up from boat either. And they gave their notes

furcata, March 17, 1956, III.

317

from a quite ritualized flying-up posture. Finally, I also heard & seen a great deal of birds flying up with pure the whole pattern just as described yesterday — no ritualized postures or movements) when I knew for sure that the birds weren't alarmed by the boat or anything else. So the birds must be alarmed. It does not seem to confirm the relationship between Cuckoo Catbird, but it might also suggest that the birds are not alarmed by the II bird. But what about the short, apparently ritualized, Cuckoo Catbird Whistles & Peep Whistles I described yesterday? I don't know. But I should mention that, although I have heard all the kinds of Whistles this morning, they have all been relatively rare. (But of course, the short forms have been less rare than the long kinds.)

It certainly sounds as if the Catbird had to reach a certain length and "intensity" before the long Whistle "can" appear. This also suggests that the Whistle is a higher intensity pattern.

I might add that most of the long Whistles I have heard following Catbirds this morning have been the quavering kind.

Perhaps the Peeps are something quite distinct from the "real" long Whistles.

I am quite surprised that the birds landing in the center of the tightly packed group seem to do nothing in the way of display.

I must mention that I have never, so far as I can remember, heard a real Peep following a Catbird. Even the shortest Whistles following Catbirds — and some of them are quite short indeed — are less sharp (i.e. abruptly beginning & ending) than typical Peeps.

Some of the Peeps are rather hoarse; almost as if they were transitional to the Buzz Note. (All the Peeps are hoarser and less melodious than the Whistles, I think.)

Again have noticed, in birds flying up, how Catbird & succeeding Whistle overlap in time.

Good news of Buzz by bird in complete nuptial floating on water. Bill opened slightly (as in my drawing on preceding page), and rattled in rhythm with the vibration of the Buzz. Bird did this from perfectly "relaxed", head drawn in, ordinary floating posture. In the middle of the Buzz it did a wide yawn (tongue not visible); but the Buzz sound continued through the yawn!!

But actually most of the *Puffins* are not accompanied by yawns.
I should add that the general angle of the bill of the bird during
the *furcatus* (as with at yawns), although pointed slightly
downward (as usual in ordinary floating posture) was not far from
the horizontal. About like this → or → more or less.

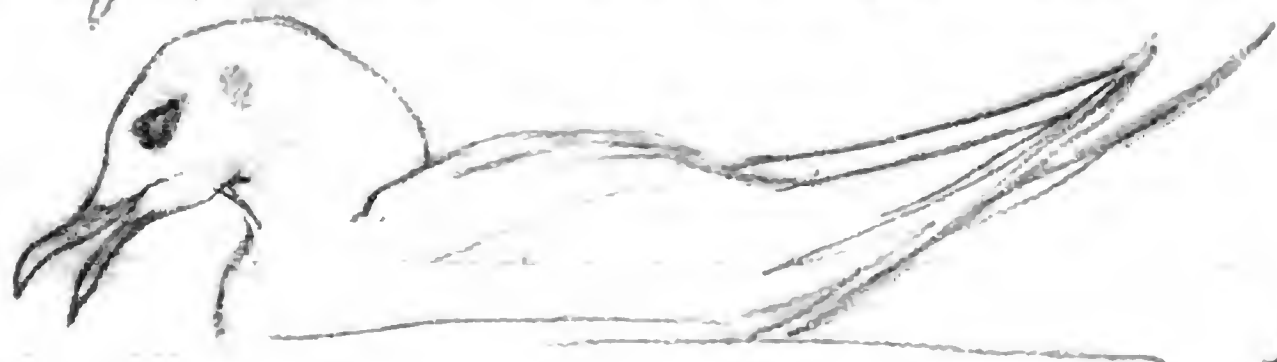
With "Bill" "Bill" I have finally managed to get a good view
of the Peep. Bird floating on water. In complete winter plumage. Gave
3 separate Peep peeps. 1. A whole burst of Peeps, (at least
4, possibly 5). In ordinary floating posture. But with a difference.
Neck more or less retracted, head & bill pointed quite strongly down-
ward. ✓ or ✓. The Peeps were accompanied by vigorous, lateral
side-to-side head-shaking. Bill quite wide open. Tongue visible
and bent as in *Brown Noddy*, (quite bright red). This actual
shaking (with the possible exception of the raised & bent tongue) app-
eared to be quite unritualized; i.e. the actual movements were quite
like those of a bird shaking its head in an antichthonous comfort mo-
vement. (This shaking was rather like the shaking of B. L. G.'s "trying
to cast up a pellet.") I think that there was one note per one
complete side-to-side shake, but I can't be sure of this.

2. A single note. Given from the same posture as 1., head & bill
pointed down, neck possibly even more retracted. Bill only opened
slightly. No tongue visible, (it couldn't be, the bill was hardly
opened far enough). Accompanied by one side-to-side shake.
3. A single note. Given from the same posture as 2. Bill possibly
opened a little more. No shake at all.

Peep posture
lateral head-
tongue deflex.



Peep posture with lateral head-shake, but without
any visible tongue-raising



Both of these may be drawn too
long-necked.

I also saw a single bird, in a complete upright position, give a very brief "real" Whistle, while floating on the water. The very brief sound it definitely indicated its neck, and went into a V semi-O posture. (Both head more or less horizontal, as is apparent by always the case in real Whistles — and Pathelets of course).

Thus there seems to be no doubt but that the Whistle and the Peep are two rather different things.

When the floating birds are really moderately alarmed by the approach of the boat, i.e. when they start to swim rapidly away, they are almost always quite silent. In an "alarm posture" thus neither the Buzz nor the Peep can contain a relatively very strong escape drive — or else they would be given by these escaping birds. They both, however, probably contain a slight preponderance of escape — as they are shown by birds flying up from the boat, and by birds floating near the boat, birds which may be slightly "nervous". The Buzz may well contain a relatively stronger escape component than the Peep, as it is given more frequently by the birds flying up from the boat.

The aural O is really remarkably long-necked. But it very nearly approaches the horizontal.



Rhynchops nigra ?

La Puente
March 17, 1956

Still the same large flock around; (the birds tend to divide into a number of small flocks, but I wouldn't be at all surprised if there were really 300-400 here all told).

When 2 birds go into the silent O+G facing one another, they often fence with their bills.

I think that what I called the polymyllabic call yesterday is something less than that. Really a single note, —, not infrequently repeated (The rhythm — — — is not uncommon). I think the bill opens & closes with each note. Again, however, the problem is to determine which bird(s) are giving the note at any given time. I think

that it is common for one bird to fly without others
appearing to be the same time. The birds seem to be extremely contagious.

These birds also exhibit some to pounce. Give a burst of notes
(let a collection come on notes left for the time being) as they go up, and
then a few notes. Otherwise the pounces are silent.

The birds exhibit "intention" movements of flying
up in a panic and one or more birds (often prolonged) lifting or
raising of the wing (often up to the vertical).

The birds look like a little bit of dejection, when they settle
down after a silent Pounce (O+G, feeding, 1956), but otherwise they
are extremely stolid and passive. Just sit, head up, facing into
the wind. Does this lack of activity confirm the theory that they have
just finished breeding?

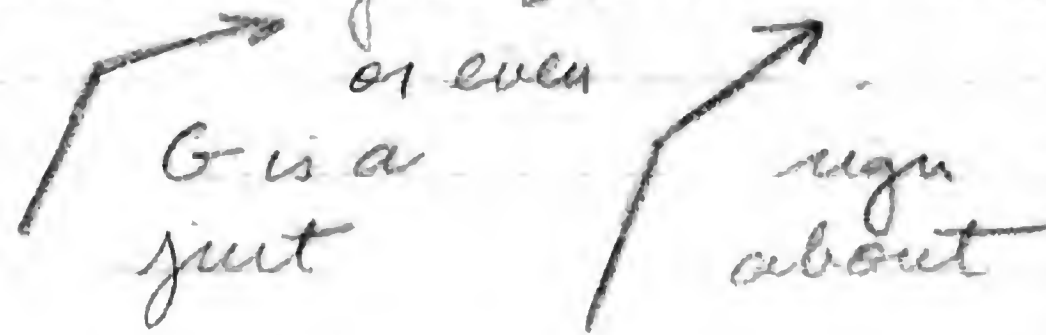
The silent O+G is often done by retreating birds, and also often
done by attacking birds. Perhaps more often by attackers.

Silent O+G reveals the vermilion inside of the mouth.

The silent O+G is quite rigidly standardized, except for the extent
to which the bill is opened. It is sometimes opened very widely indeed,
and at other times it is opened so slightly that the G is barely visible.

This species is large-billed, large-headed, very small-bodied, and
very, very long-winged.

A sort of "Air V" posture assumed by birds retreating during a
dispute is much like the O posture (probably identical in fact) without the
G. Angle of bill, head & neck come ca (This would seem to indicate that the
of relatively strong attack alone — what one would expect



The angle of the gape during rather extreme G's is as follows:

Many times, however, the bill can be quite
wide open with a narrower angle:

Some of the O's & G's have an angle in the neck like the St. of
the Inca Tern

Have seen a few G's from unritualized pre-attack movements
just before or during attack. These attack movements were sort of low
lunges, quite unlike any O.

Some semi-O-semi-O's, with bill closed but pointed diagonally
upward, would appear to be low intensity forms of O+G (This, of

Rhynchops nigra I. (cont. of 1955) 27

course, is physically indistinguishable from the air. V described above. Probably, in fact, it is the same thing. But then one must state that the air. V frequently occurs without actual retreat. (Which is by no means improbable, however).

Actually, it would be a mistake to say that these birds are inactive. They do a lot of "air" - O.G. - feeding. But the trouble is that they do very little else.

Feeding is sometimes accompanied by opening & closing of the beak (moderately rapid, but not fast enough to be called as real rattling or "flapping").

Have seen many more cases of G before and during the day. Again. Usually from O.G. something. But not infrequently from quite unventralized attack position.

Some bird in the group on the ground is giving these single sharp notes I described yesterday. Once followed by a couple of other, more muffled notes I wouldn't be surprised if this sharp note was only a form of LCN, (perhaps the typical form when the LCN is single).



In fact, now I'm not even sure that there is such a thing as a sharp note. Have just heard sharp notes in the — — — situation. Perhaps the sharp notes are just loud LCN's.

I should add that I think that whenever LCN's occur in "bursts" of 2 or 3, the last note, or last 2 notes, are more muffled than the first. The tendency to give early and frequently might be taken as another sign of relationship with the tones.

A lot of these birds are molting the primary feathers — further evidence that they have just completed the breeding season.

Rhynchops nigra ?

La Puntilla,
March 19, 1956

A single LCN, from perfectly relaxed (head rather drawn in) posture, by bird on ground, accompanied by very slight "throw back" or "backward head-toss". (Bill doesn't go higher than  or ). Is this usual? (I think so).

Yes! I have seen it again & again, in several individuals.

There is certainly an alert or alarm posture, provoked by potential predators, which seems to be essentially identical with the air. V, although

surprised enough, apparently shorter necked. (and with bill more horizontal)

— Both of the birds in the dark grey all over (bill & face, except for an irregular white band beneath the black cap.

There is a silent but sharp version of LCN is not infrequently given by even birds flying about with a panic-stricken flock. It certainly contains quite a strong escape drive. But all the LCN's must contain quite an appreciable escape drive — as shown by the frequency with which they are given in the flock as it goes up for the panic. (This latter is by no means imitative however. I have just seen a series of small panics in which there were only one or two LCN's, rather sharp but "mothered", as the whole flock went up. LCN's are much commoner as a flock comes in to land after a panic. I.E. the motivation of this LCN's seems to be similar to that of many LCN's of gulls.)

Can confirm. Real abrupt panics go up silently or (more often) almost silently, with just a few mothered LCN's.

Perhaps a little discussion of the V business might help to clear up a little confusion in my earlier notes. There is really only one V. In physical form, it resembles the ans. V's of gulls. Some of these V's seem to be also similar in motivation to the ans. V's. But others are definitely much more aggressive, similar in motivation to the moderately (at least) agg. V's of gulls. Low intensity forms of V in this Shimmerer could be described as slight "chin-lifting", with (almost always) some slight stretching upward of the neck. The whole V complex of the Shimmerer looks like a low intensity version of the O or O-V + G complex. And this, in turn, is obviously related to the O + LCN pattern. (Although now I am by no means sure that the LCN's are ever accompanied by more than a slight trace of low intensity O or V).

Lower bill during G is like this:

& a lower "point" near angle of gape


Definitely an upper

I might add, as a matter of general comparative interest, that none of these Shimmerers seem to "yawn" when "nervous".

The shape of the bill, particularly the angles of the beginning of feathering at the base, is remarkably variable from bird to bird.

Another rhythm of a series of LCN's is — — — — —

This species is very small tailed. Add to the most peculiar impression it conveys in flight.

Some of the LCN's given when birds are landing are definitely rasping in quality. . But deep & rather muffled sound rather term-like, but a bass-voiced term.

Another LCN rhythm is apparently — — — — —

Are many of the LCN's on ground given with bill closed? I can often hear a lot of LCN's coming from group on ground, without seeing any signs of bill opening. Or any change from relaxed posture either.

I can also hear a lot of LCN's from flying group without seeing any open bills either. Birds just flying from "normal" "relaxed" posture, no sign of either ritualized posture or movements.

This calling with bill closed would certainly explain the "muffled" sound of so many of these notes.

And I think that I can certainly confirm now that the LCN is apparently never given from extreme O or O-V posture, on ground or (probably) in air. (I was definitely wrong in my description of LCN's from extreme O 3 days ago).

Have now seen & heard a series of LCN's by bird on ground, with very slight but definite opening and closing of bill in rhythm with notes. From slight V. bill pointed slightly diagonally upward. No other trace of ritualized posture.

This species is almost created.

One bird near blind, definitely "nervous" stretched neck diagonally downward, and dipped bill in water. Then back to relaxed standing posture, (no trace of lifting bill as in drinking). I have seen the same movement in various intra-specific hostile situations, (e.g. by attacker after attack). This may well be significant.

So, in general, I have come to the conclusion that the LCN pattern is not very closely related to the plain V pattern and the O+G complex.

The curve of the mandibles also varies tremendously.

Lots of birds in a panic flock will skim briefly. This also looks significant. (They can hardly be feeding at such times).

No!!! No!!! I have to take back again a lot that I have said earlier. There do seem to be quite a lot of LCN's, on the ground, from an extreme V-O posture. Neck usually vertical or nearly so, head & bill inclined diagonally upward. (But this posture is never, I think, quite as extreme as the most extreme O+G postures). Bill opens & closes in rhythm with the notes. But it never opens very far, nothing like so

far as I see during even moderate intensity G's.

I have just seen a burst of these extreme LCN postures during a genuine outburst of hostility in a flock on the ground. Interspersed with a lot of O+G's, Whining, etc. Obviously hostile, and in this case probably quite aggressive.

So LCN is related to O+G after all.

Well! Well! One of the angles I drew, earlier this morning, in my sketch of the mandibles during O+G, is not always present. In fact, it isn't visible at all in some O+G's. When it is visible, moreover, it is actually caused by the bent tongue (bent as in the Brown Noddy)!! This bent but flat tongue is quite small but quite conspicuous when present, (which may be in anything from 25% to 75% — I can't be sure — of the most extreme O+G's).

I wonder if the absence of separate distinct Alarm Call could be taken as a sign of relationship to the Inca Tern & Brown Noddy? Probably not.

When a bunch of birds are giving repeated LCN's together, the whole thing sounds rather like a form of Chattering.

I have just seen a bird in quite extreme V, head & bill pointed diagonally upward, open & close bill just as if it were uttering a series of LCN's. But absolutely no sound came out! (Could this be explained as alternation of O+G-V-O+G-V-O+G-V....? Probably).

I should emphasize that there is no difference between the O part of the O+G and the extreme V. And both are essentially the same as the LCN posture. Any average differences that there may be are purely matters of intensity.

I see our bird, (at least) with a completely grey face & forehead. One unneutralized attack posture looks rather like this: Sometimes with G.

Most unneutralized attack postures are rather more like O or V, i.e. the neck upward more. Again often with G.



tail postures is stretched

I haven't seen any more real "rattling" or "Klappening" of the bill; but it is obvious that the bill is usually opened & closed more

Elanus nigripes

double during juvenile form -

The insertion of bill, inside of mouth, tongue, legs & feet, all believably bright in the species.

The lowest intensity form of "Sun lifting" looks somewhat like the juvenile. I think the neck is always stretched upward a little.

A thin line of black around neck, carpi and shoulders →



furcatus

Faras Bay,
March 20, 1956

Same flock, same place.

Have just heard a bird fly up with Buzz, followed by brief but definite trace of real Whistle. Bird in complete winter plumage. (This is further proof of the relationship between Buzz & Ratchet.)

Peep from perfectly relaxed floating posture. Brief opening & closing of bill. No trace of tongue - running or head shaking. Bird in complete winter plumage.

Have seen & heard several flying adults in complete nuptial give Buzz Notes. Bill opens & closes very slightly with each note. Full Ratchet & Whistle done by flying bird in complete winter plumage.

I am pretty sure that all the comfort movements by flying birds are purely autochthonous. I seem to be alone just as frequently by birds flying far away from the boat as by birds flying nearby. I might add that not only does this species do far more comfort movements in the air than any other species I know - but it also is far more "anobatic" in doing them, reaching much farther back, over shoulder, under wing, etc., for preening.)

Can certainly confirm that the usual long Whistle following Ratchet now is a fluctuating "Ja-when-a-when" type.

Can also confirm that the extreme aerial posture is (always?) adopted for both a Ratchet alone and a Ratchet & subsequent Whistle.

Watching bird floating on water. Gave 2 Buzz Notes in quick succession, opening & closing bill very slightly with each note. Then

a quick side-to-side lateral head-shake with bill closed. Head back to neck stretched vertically upward rather more than usual during floating posture, and bill was nearly horizontal.

Am confident now & again that bill is opened very slightly for Buzz notes, and that the bill is approximately horizontal during the notes. (This is certainly true of birds on water, and certainly true of many birds in air.)

I should also add that these birds do an awful lot of comfort movements on the water, not only the same movements I mentioned 2 days ago, but also OCE, stretching the neck upward & forward while the head remains approximately horizontal. (Bill and without lateral head-shake, with bill closed) etc. Some of these are done by birds approaching another bird or being approached by another bird, and look "significant" — but they probably aren't.

Have just seen & heard a bird in complete winter plumage fly up with long Patchet, from O. The interesting thing was that this Patchet was fluctuating in same rhythm as "4-syllabled Whistle!"

Slow side-to-side head-turning is certainly sign of "new-owners" in these birds too. Provoked by boat.

Before I forget, I must add that the one bird I have seen doing Peep this morning opened bill fairly widely for sound (i.e. like the bird I saw 2 days ago) but had bill fairly horizontal. (i.e. unlike the bird I saw 2 days ago).

Almost all the birds I have heard give Peeps this morning have been moderately far away from the boat. Does this mean that the "new owners" of the birds near the boat tend to inhibit Peeps? (I.E. is the Peep relatively more aggressive than the Buzz?)

Notice that Patchet and Patchet & Whistle are contagious. If one bird gives voice to these, it is very likely to be "answered" by one or more other birds — sometimes from quite far away in the flock.

There are certainly quite a large number of notes intermediate between Peep and Buzz.

Bird on water, (just halfway between winter & nuptial plumage), stretches neck up & forward, (perhaps lifting fore part of body out of water a little), does quick lateral head-shaking, (head horizontal, bill closed or opened only very slightly). Then, just after it alters into head-in-floating posture, it opens bill slightly (bill approximately horizontal).

and apparently utter a single *Peep* to

The *Peep* is also *antagonistic*. Very likely to be "answered" by return *Peeps*.

Two birds in complete nuptial plumage, (presumably not mated), facing each other on water, uttering repeated *Ratchet*-Whistles performed from U. Then stop, stay facing one another in U for a few seconds, one Gapes widely (I don't think tongue visible), does one quick "nervous" over-the-shoulder preening movement. Then birds separate, relax, begin to preen "normally".

There seems to be some "correlation" between *Ratchet* Whistles and *Peeps*, i.e. when a burst of R-W's occurs, there are also apt to be a lot of *Peeps* in neighborhood, and when a burst of *Peeps* occurs, there is apt to be one or two R-W's in neighborhood. Of course, I can never be who is doing the *Peeps*. But this is further evidence that the *Peeps* are hostile.

Bird in complete nuptial plumage gives series of *Ratchets*, without Whistles, toward another bird. From very diagonal D, (the most diagonal I have seen here), but with rather a short neck. Obviously hostile; quite effective in making the other bird retreat.



Certainly, the fact that I have seen so very few *Peeps* must mean that it is never accompanied by extreme postures or movements. It might even indicate that it is relatively seldom accompanied by shaking, but this is rather dubious.

I must add that I have never seen a bird that I know to be a first-year bird, (i.e. with a black-banded tail). This does not necessarily mean that there are none present; but they must be relatively rare.

pipixcan

La Pintilla,
March 21, 1956

I have seen a number of Long Call performances on the ground by the birds here, (although I haven't really been studying them). Surprisingly enough, all the ones I have seen have been O-L, (with a lot of short notes during the L — maybe up to 5 or 6),

without a trace of subsequent T. But the mean that the O-L-T
T. performance I saw at Delta included an appreciable sex drive?
Or (more probable) does it mean that O-L is lower intensity than
O-L-T?

March 21, 1966
La Puntilla

Just a summary of the birds I have seen in the neighborhood
One gannet, Bonaparte's Gull. Sp. unknown.
Lots of Shimmere, probably 5 intertidal. (There were appar-
ently many fewer around the last few days, but this apparent de-
crease may have been more deceptive than real)

Three Thalassidroma terns; one in nuptial plumage, and two in
winter plumage. All the same species, which, surprisingly enough,
I think must have been maxima. The birds appeared to be larger
than the elegans in Antofagasta, (much larger than Franklin's
Gull, perhaps even larger than the shimmere). They also appeared to
have shorter, thicker bills, and shorter crests, than the Elegant
Terns in Antofagasta.

Grey-headed Gulls, Sooty-tail Gulls, and Franklin's
Gulls. There was no apparent change in the status of these species
during my stay at La Puntilla.

Grey Gulls. I saw a few more of these around La Puntilla
during the last few days. Most of them (at least) were adults. One
or two still in fairly complete nuptial plumage; the rest in fairly com-
plete or complete winter plumage.

Bulwer's Gulls. I didn't see any of these during the last
few days.

Pale Gulls. I saw 3-5 of these birds during the last few
days. At La Puntilla. At least one adult, the rest young juv-
eniles.

corrocephalus

March 28, 1956
Guayaquil

There are still quite a number of these birds here.

One of them (at least) in complete winter plumage, is molting its secondaries!!! Other birds, although I haven't seen them close up, appear to range from complete winter plumage to complete nuptial.

All this makes it very difficult to determine anything about the breeding season of these birds.

The adults definitely have 2 mirrors on their primaries.

One bird, apparently in complete nuptial plumage, circles (very irregular - sometimes figure-of-eight) high above me, alternating bursts of single LCN's (quite long drawn) and bursts of single "Kek" A.C. notes. The A.C. notes were given when the bird was nearest to me, the LCN's when it was farthest from me. No signs of ritualized postures or movements except that its neck was stretched forward & slightly upward during the LCN's.

corrocephalus

April 2, 1956,
Guayaquil

Watching a lot of these birds this morning, as the ship gets ready to leave and then starts down the river.

There is no doubt but that a lot of these birds (perhaps 30%) are in complete nuptial plumage. The others are in various stages of winter plumage. Some of the latter are molting secondary feathers, but I have seen some molting primaries.

There are probably as many of them here now as there were in October. Just more difficult to watch, as there is so much floating in the river that they have plenty of objects on which to rest in mid-stream. The result is that I have just been watching several behaviors.

I have heard a lot of calling by flying birds. I can run up the whole bunch about as follows:

Alarm Call. Alarm Notes have been common. The basic note is "Kek", and I have heard a few double "Kek Kek"s. A peculiar feature of these birds is the frequency with which they

give long, up to 2 or 3 notes, some of single notes, with a definite but very slight pause between each note "Kek... Kek... Kek..." I can't remember any other species giving such a series with such frequency.

Another peculiar feature of the Alarm Notes of this species is the fact that they appear to be somewhat more aggressive than the corresponding notes of other species. Thus a bird will give Alarm Notes when flying straight toward the ship, quite close, without any overt signs of aggressiveness. And I heard one bird, in answer to my call, give a series of Al.C. Notes as the only response to my call. (I don't know whether it had played the role of pursuer or was just responding to my notes.)

This does not mean that the Al.C. Notes are really aggressive in an objective sense. They are not produced by an attack drive stronger than the escape drive. Just by an attack drive relatively stronger than the attack drive in most Al.C.'s of other species.

I have just now heard a "real" triple Note Al.C., i.e. "Kek Kek Kek".

Various forms of LCN's have also been common. Aside from a few of the briefest low-intensity notes, they have all been given by adults in complete or almost complete nuptial plumage.

These LCN's can be divided into three main types.

Very brief low-intensity notes "Kwaarr".

Longer, apparently higher intensity notes "Kwaarrrr".

Both of these rounded intermediate between the Al.C. Notes and the PCC Notes (see below). They are usually given from a normal flying position (i.e. head down in), but some of the notes (particularly the longer ones) are given from a posture in which the neck is stretched more or less straight forward. (Very occasionally a note is given with the head turned sideways or pointed downward, pointing the bird for which the display is "meant").

The third type of LCN appears to be a real PCC. Very long and (usually) quavering, "Kwaarrrrrrrr".

This is sometimes given by birds flying near the ship, (usually when there is a burst of calling in the group), and I

have once heard it given by the pursuer during a pursuit flight. (I should add that the PCC notes seldom occur alone. Usually in a burst of at least 2 or 3 notes. During the pursuit flight the pursuer uttered at least 4 or 5 notes. These PCC notes are always (?) given from the position I sketched in October, i.e. neck stretched forward and slightly upward, head & bill pointed slightly or moderately diagonally downward. All in all, it is safe to say that the PCC notes are obviously higher intensity than all or most of the "normal" LCN's and also more aggressive - in most cases at least.

The Pursuit Flight I saw was very reminiscent of the B.L.G. The Pursuer flew with see-sawing steep wing strokes, (this was almost a Butterfly Flight) considerable twisting & turning. The Pursued flew with deep, rapid, somewhat less buoyant strokes. The Pursuer evaded the Pursuit by a swoop & soar. Quite extreme. About like moderately-extreme swoop & soar of the B.L.G. The swoop was "flying", the soar was half flying (at beginning and end) and half "gliding" (in middle). Unfortunately I didn't hear the accompanying calls - if there were any.

Bolivar, p.m. The birds followed the ship down the river, and when we arrived here we found more of these gulls waiting for us.

It is probably significant that Grey-headed Gulls are fond of perching on the masts & booms of ships. They have the same "semi-aquarial" habits as the B.L.G. and Bonaparte's Gulls. (It is noticeable, incidentally, that neither the Laughing Gulls nor the Franklin's Gulls ever attempt to land on boats or masts. They always prefer to sit on the water or floats are floating on the water.) This is further evidence that the Grey-headed Gull is a "typical" member of the B.L.G. group.

At last! I have finally managed to get a half-way decent view of throat & appearance display postures and some pairing behavior! Two birds swim together and do O-F-U & HF-U. Quite clear, obviously ritualized, apparently moderate intensity. The O, (just as I thought), is very reminiscent of

circuscephalus April 2, 1956, III.

(3263)

the O of Bohnaparte's Gull? Definite, raised neck, head and
bill pointed at least slightly forward. (This is quite
distinct from the O of the Bustard. Blue Gull)
... quite extreme, but facing... about inclined... like
this... the ... quite ... of the
winter... type. The H was full...
that of the B.H.G. ... feature of all these
... was the fact that the ... were not raised at all.
they were kept firmly within "pockets". I presume that
this unusual ... that the ... occurred
on the ... accom-
... O → F
... note, ...
... LCN's (i.e.
the E.C. of this species is essentially like those of its relatives).

A few more notes on physical description of the birds.
The bill, legs, and feet of the adults in full nuptial plumage are
a most peculiar color. Sort of mixture of orange-vermilion and
brown. Moderately light and moderately bright. In certain lights,
in some birds at least, they look almost bright crimson.

The head of this species is not "cut out" quite as much
as that of the B.H.G. More like the head of Bohnaparte's Gull.

I should add that almost 50% of the birds here app-
ear to be adults in full nuptial plumage. And there are at
least 2 birds in juvenal plumage (which looks quite new
and fresh!).

circuscephalus

Bolivar,
April 3, 1956

I have caught a glimpse of another M.C.; but only the tail
end unfortunately. Neutral V & H, just as before.

Have seen several birds, in both complete nuptial plumage and
complete winter plumage, go down into H & R when a flying bird
tries to supplant them. Usually, I think, accompanied by one or
two loud LCN's (These H's, of course, are quite probably "really"
low intensity F's).

carbocephalus, April 3, 1956 I

27

The only other interesting pattern I have observed in "staccato LCN's" (which I mentioned earlier in October) is that staccato LCN's were not uncommon when one bird tried to supplant another on a nest or roost. Always (?) given by the bird on the perch, trying to defend its rights. Anything from about 3-4 notes to 6-8 notes. Usually sung at 32 transcribed as "Ka ka ka ka...", sometimes almost "Tuk a tuk a tuk..." Whole series always brief. Although the staccato notes themselves are rather similar to L.C. notes, they are definitely distinct in sound. I am not quite sure why this is, but the staccato notes are certainly less sharp than L.C. notes, and this may be the whole explanation. The staccato LCN's are usually given from "unindividualized" hostile or pre-attack postures, the performing bird often thrusting its neck or raising its head to face its opponent, but I also think that once or twice I heard it given from air. I am by no means sure about the motivation of the staccato LCN's, but I would guess that they are usually hostile aggressive. And they certainly look as if they are lower intensity than the complete L.C. performance, i.e. they are not uncommon during disputes over perches — disputes that are always brief, and during which complete L.C.'s are very rare indeed).

atricilla

Bolivar,
April 3, 1956

The only thing I want to mention is that the voice (i.e. LCN's and L.C.) of the Laughing Gull is quite remarkably like that of Franklin's Gull.

Bolivar,
April 3, 1956

And now a list of the birds I have seen during this last week in Ecuador. Most just a recapitulation.

Royal Terns. Common at La Libertad, (the only lands I saw there) and a few birds around Bolivar.

Grey-headed Gulls. Common all along the Quayas - from Quayas to Bolivar. (Also a few birds a few miles at sea, both north & south of Cuna Island)

Family - Gulls. Just the same as the Grey-headed Gulls (mostly adults, almost all in complete nuptial plumage).

Franklin's Gulls. A few, (mostly immatures and adults in more or less complete winter plumage) near Quayas.

Grey Gulls. About 2 or 3 (juveniles and adults in winter plumage) near Bolivar.

Pink Gull One juvenile near Bolivar.

Watching many birds forage. Lots of Jays and
Starlings in the woods around. The Starlings are mostly adult in
full breeding plumage. Several displays.

~~LCT. LCN~~ ~~T-T~~ ~~OL-OL~~ ~~T-T~~ ~~T after attack~~
~~LCN~~ ~~LCN~~ ~~LCN~~ ~~LCN~~ ~~HB-OL-HB~~ ~~V.~~
~~T-T~~ ~~T-T~~ ~~T-T~~ ~~T-T~~ ~~LCN~~ ~~LCN~~ ~~O-HB-OL~~
~~O-HB-OL-T-T~~ ~~T-T~~ ~~HD~~ ~~LCN~~

Toward flying birds. π π π $\overline{L\overline{C}N}$ $\overline{L\overline{C}N-L\overline{C}N}$ \overline{T}

~~N after attack~~ ~~M M M~~ ~~OL before attack~~ - ~~HB after attack~~
~~T T T - N~~ ~~O - HB - OL - T~~ ~~M M~~ ~~T after attack~~ ~~T after~~
~~attack~~ ~~T T T - T T~~ ~~11 T's~~ ~~18 T's~~ ~~HB - OL - T T~~ ~~O~~
~~O - HB - OL - T~~ ~~M before attack~~ ~~OL after attack~~ ~~T T T~~

♀ FB from ♂. Usual T from H. ♂ regurgitates twice,
in the usual larvae way, but quite silent!

Mutual T performance between ♂ and ♀. ♀ from H.
♂ with weak semi-erect

~~O-HD-OL-T-T~~ ~~O-HD-OL-T-T-T~~ before attack 7 F's 5.
~~M after attack~~ ~~M before attack~~ - ~~after attack~~ ~~T after attack~~
~~T. O. V. V. V.~~ ~~O-HD-OL-T-T~~ before attack ~~O-HD-OL-HD~~ ~~OL M M~~
~~LCN. LCN. T T~~ ~~O-HD-OL-T-T~~ ~~T - M before attack~~ - ~~M after~~
~~attack~~ ~~LCN-LCN~~ ~~LCN-LCN-V-T~~ ~~O-HD-T-T-T~~ ~~LCN. T.~~
~~HD-T-T-T before attack~~ ~~O-HD-OL-T-T~~ ~~OL-T-T~~

scoreless, Nov 8, 1956, II

(331)

* ~~OL~~ before attack - ~~OL~~ after attack ~~OL~~ before attack
~~after attack~~ ~~before attack~~ - ~~after attack~~ ~~OL~~ ~~HD~~ ~~OL~~

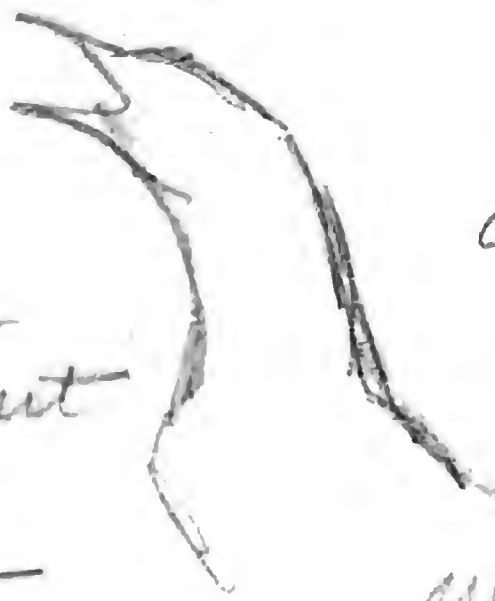
Attempted rape. ♂ just jumps on ♀ without preliminaries. But once he attacks a Cop. ♂. Harsh lamine type. In this case, of course, it sounds more much like the second O call (which I will designate as OL) ♀ runs out from under.

Seen several more cases of mutual T-ing between ♂ & ♀. Just about as before.

I am now beginning to sort the performance clear in my mind. The typical form is apparently O - HD - OL - series of T's.

The preliminary O is apparently the most variable. Anything from 1 to 5 or 6 notes, usually 2 or 3. Hoarse, rather muffled. Fairly low in pitch. Nothing like so harsh & pumping as the OL notes. Given from a rather low-intensity-looking posture. Neck stretched slightly up & forward, head & bill pointed upward more than they are in the typical OL posture. Not really distinguished in appearance. Perhaps something like this:

The HD is much more distinctive, as far as both posture & concerned. The notes themselves are pitched, and long. Vary from about usually 2 I think. The posture is extreme. My drawings of it from last year are pretty good I think. But it is possible that in the most extreme cases the lower bill is almost touching the neck. Sometimes a trace of the second lump in the neck like the Silver Gull.



call are
pure, high
1 to 3,
most

The second O, the OL, is also quite distinctive. A long series of very harsh pumping notes. Usually at least 7 or 8, sometimes many more. They really do seem to have

scabiei, Nov 6, 1956 III.

the
... ..
... ..
... ..
... ..
... ..
... ..
... ..

There is nothing more
typical of the country than the
small villages and hamlets. To
be a true country, it must have

to say about the
OL in the pasture
from 12 to 14 years to
15 years

HD

OL

Great variations of course Single O's. Perhaps an occasional single HD. A few O-T performances Quite common HD-O-T performances

* One case of Freeze + Squat by a and right after attack!
9 LCN's. 10 more LCN's. 13 LCN's. 0-HD-OL-T-T-T
LCN-LCN-T-T-T-T-T-T-T-T-T before attack

None of the V's I have seen have been very extreme or more, lower. Curps just out of feathers. Rather intermediate type. Definitely ritualized to some extent, but relatively very little.

Most of the drumming I have watched this morning has been connected with feeding, insofar as it has occurred when the birds were crowded around garbage cans. But the T's have certainly not been FB. Occur when the birds are foraging one another, when none of them is feeding. And

never long, peaceful runs. Never mutual. Always with violent hostilities. And obviously intruding birds giving hostile T's do not approach their opponents and try to "sneagle" under them. They either rush toward their opponents, stand still, or even (occasionally) retreat.

Have just seen a preliminary O, typical notes, given from a typical OL posture. I think that, in my counts, I shall continue to distinguish the O from the OL on the basis of the accompanying sounds — even when the post. note is not "typical". But I shall probably have to drop all distinction between O & OL when getting the counts ready for publication. This is evident, incidentally, a further evidence to show that the first O is really a low intensity form, or at least closely related to, the second O.)

* T-T-T-T OL-T-T-T-T T-T-T-T T-T-T-T O-HB OL OL
T-T-T before attack - T after attack T-T-T before
attack M 12 LCN's V after attack O-HB OL-T after
313 attack post. O-HB OL V.V. 7 LCN's 4 more

This M behavior is peculiar. Long hoarse throat notes. Low pitched Not harsh. Given with bill closed I think. Sometimes from posture like this while bird runs or walks. Have once seen it from same posture with body tilted more, tail up (and tail spread). This latter was done by stationary bird. Looked very much like Choking but there was no trace of Choking rhythm to the call.



Can confirm something that I noted last year. The LCN's of these birds on the ground and in the air are relatively very sharp and explosive. Sound almost like the Al C. notes of other species; but much harsher & more guttural. Presumably in correlation with this, the species

Monday, Nov 8, 1956, V.

(334)

seems to have a distinct & separate set of notes

It is very important that the LCN's on the ground are usually in doublets, while in the air they may be organized into doublets & triplets.

These birds do not seem to have any special displays directed toward King Gulls in these circumstances; but it is possible that they tend to direct flights of T's toward the larger birds. Other King Gulls keep out of their way.

Have heard a single glimpse of real copulation attempt in the distance. Call is even more rapid than the OL call. The post-cop display of the ♂ was V (and possibly HE).

Just after writing the notes about LCN's, I have heard several birds on ground give apparent LCN's in doublets. Are these really ABC notes? I doubt it. But they are perhaps sharper than other LCN's. Perhaps I should speak of "Alarm LCN's".

There still seems to be no Landing Call.

Many attacks are not preceded by ritualized display. But an attacking bird usually opens its bill as it rushes forward. This does not appear to be ritualized, so I am not calling it G or including it in my counts.

12 LCN's. M-M-O-HD-OL-M M M before attack - V after attack. before attack - V after attack M before attack. O-HD-OL-T. Gost M before attack.

There have been several cases of birds giving M notes in posture reminiscent of Ch-type. Several M notes from erect posture. could be. All very reminiscent but without any trace of rhythm. Also one bird gave



M. M before attack M T T O-HB-OL-T T LCN
 before attack LCN LCN LCN T O-HB-OL-T M M M
 attack V V LCN T LCN before attack O-HB-OL-T before attack

LCN LCN LCN LCN LCN LCN LCN LCN LCN LCN LCN

Another cop call — as before — very rapid

O-HB-OL-T T T T T M-M-LCN T T LCN LCN LCN LCN
 O-HB-OL-T 13 LCN's O-HB-OL-T 6 T's 8 LCN's O-HB-OL-T
 OL-T O-HB-OL-T T V

I have just seen an extremely vertical type of preliminary O



"Friendly" sexual T's are apparently characterized by a much greater "throw-back" than most purely hostile T's

Another burst of mutual T'ing between ♂ & ♀ ♀ w H
 ♂ neck more erect ♀ greater throwback. Then ♂ starts cop call, then jumps on ♀'s back. Cop going well until juv interupts. ♂ slides off ♀. ♂ stands in V, does HF (rather slow & not very distinctive).

♂ alone on ground. Goes into V, gives out LCN, as ♀ comes in, silently, to land beside him. Then M.C. of V + HF (quite distinct well-marked single movement) - V. Then ♀ begins T'ing almost immediately. ♂ also begins. ♂ necks ♀. Then this continues for a while. Mutual T'ing, with repeated pecks at the ♀ by the ♂. (Looks almost like Heble's theory of ♂ pecking ♀ whenever she lifts her head)

The ♀ did several josts during this performance, and I have seen other birds, both ♂ and ♀, do similar josts during similar bouts of mutual T'ing

in my counts. I have counted doublets & triplets as one LCN's.

I have tried to watch for aerial displays. But all I have seen have been single, doublet, & triplet LCN's from the usual unventralized or largely unventralized postures.

Note: the counts today were spread over a period of approximately 3 hours.

✓ O-L-T-T ✓ O-HD-OL-T-T ✓ O-HD-OL ✓ O-HD-OL-T-T ✓ O-HD-OL-T
HD-OL-T.

Nov 2, 1936
Pac. Gulls

Can confirm that a series of LCN's, (usually single - at least so far today), take the place of a Landing Call.

The hostile T seems to be the weakest, probably lowest intensity of all the hostile reactions. (This seems to be very clear today. It is extremely windy today, and all the gulls are just sitting hunched up in a huddle. Almost no display when a new-comer lands in the group. Just one or two of the nearest birds will give one brief weak T.)

Some of these T's may be "greeting" from mate. If so, of course, they could be considered a form of M.C.

* O-HD-OL-T ✓ O-HD-OL-T-T ✓ O-HD-OL-T ✓ O-HD-OL-T-T ✓ O-HD-OL-T-T
T-T T-T T-T T-T O.O. LCN's Gost. Gost.

It is quite remarkable how relatively few displays there are before & after attacks. Attacks are not infrequent in this little group of birds. Usually very brief pecks & jabs.

I have just seen one preliminary O which was given

338

defunct

Before attach - Before attach Before attach Before attach

A new case of regurgitation, from ♂, for a long time, T-ing from extreme H, and picking at his bill. ♂ stands fairly erect, turning this way and that, lump of food visible in his throat. Starts to throw up, or actually regurgitates, 4 or 5 times, but ♀ doesn't get any food as ♂ always swallows it back or another gull interrupts. The ♂ was absolutely silent during this performance, except that he once gave a couple of T's. And yet there was ample evidence that he was hostile. Not only was he obviously reluctant to throw up, but he made a redoubtable attack on a neighboring Dolphin Gull and another on a nearby Kelp Gull - the first attack on a Kelp Gull that I have seen here.

Before attack - After attack - After being attacked. J-HD-OL-4
 Just foot. J-HD-OL-4 4.4

Another case of a ♂ feeding a ♀ without a trace of M.

Alba! A lot of aerial behavior as a flock returns from feeding in a nearby field

First of all. A short but quite steep swoop and fear. Couldn't tell if this was ritualized or not - or what its object was. But the swoop was accompanied by one or two long

scored, Nov. 9, 1956, III

(357)

low-pitched hoarse notes. Sounded very much like the M notes I heard on the ground yesterday, but perhaps a little less harsh (this effect may possibly have been due to the wind).

Secondly, one bird of an apparent pair, landing at the same time as its presumed partner, gave a similar notes as it came down. Just where one would expect a Landing Call.

Thirdly — and most spectacularly of all — a complex performance by a bird coming in to land, before it actually began to come down. First one of the same long notes, then a series of shorter notes (about 5 or 6) very similar to the notes given from the OL on the ground, but perhaps less harsh & pumping or abrupt, than another of the longer notes. The whole thing given from a sort of HD posture.

This last
ed to be a
Call



performance certainly resem-
bled a modified, abbreviated Long

These longer low-pitched hoarse aerial notes almost appeared to be "real" LCN's (i.e. the exact equivalent of the LCN's of other species). In other words, the LCN's of this species are either divided into 2 distinct types of notes. Or the homologue of the Al C notes of other species takes the place of most of the LCN's. Or the M notes of this species have taken the place of many LCN's. At the moment, I incline to the latter hypothesis (although it is very badly phrased here).

It might be better to say that the note which has assumed the partly sexual value of the M of most gulls has remained purely hostile, moderately high intensity, and relatively aggressive in this species.

I have seen about 3 more MC's now. Mutual V's, (appearing to be rather on the "aux" side — morphology —

scorebii, Nov. 9, 1956, IV.

(340)

... with long thin neck & bill (neck tilted or pointed slightly upward). Continued, once or twice with long away from the partner or looking from side to side — an unritualized looking movement which I would be almost too flattered to call HF.

My notes today for about 45 minutes.

November 19, 1956
Punta Arenas

About the species in the neighborhood. Four are quite common. South American Terns, Kelp Gulls, Patagonian Brown-headed Gulls, and Dolphin Gulls. The first three species are certainly breeding in the neighborhood but I am not sure about the last. There are also a few Great Auks around; almost certainly not breeding.

scorebii

November 22, 1956,
Punta Arenas Bay.

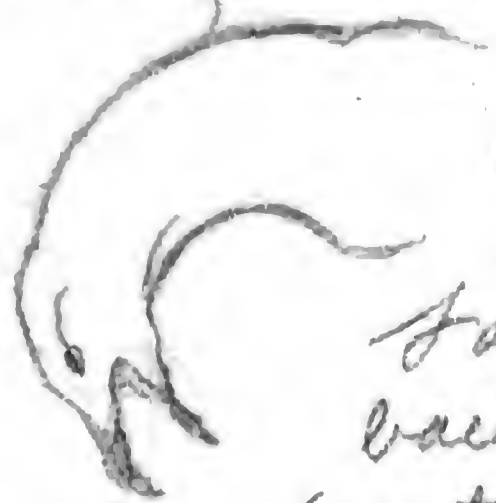
I managed to observe some aerial behavior by adult birds in complete nuptial plumage (which are relatively rare here now — as the molt factory doesn't seem to be working).

One bird having a Kelp Gull. Rapid twisting flight. Unusually deep wing-beats, but not a ritualized Butterfly flight. Uttered a series of long, slightly quavering notes. These had the usual hoarse tone of the species, but were not as harsh as the "M" notes. Occasionally PCC notes.

Also heard several fractions of complete LC (the rapid OL notes) given by flying birds whirling in distant groups.

Then one bird flew near me, with 3 or 4 companions and gave complete aerial L.C. sounded just like ground L.C., including O-HD-OL-T (single) phases. Wings continued beating throughout the performance. Bird tilted its head & neck up diagonally and was slightly for the prelude may O. Then down into extreme HD for next phase.

(This species certainly has the most extreme aerial HD of any I have ever seen). - Then up into definite OL posture for the next phase followed by a definite backward head-tilt; (not very extreme, as compared with the head-tilts shown on the ground - hardly reaching to the vertical -)



I can certainly confirm that the harsh LCN's which sound so much like the ALC notes of other species are the usual sounds when a group of birds is milling about - even when there is no prot. fled. nuzzle (to me) near by.

dominicanus

November 24, 1956
Powenir Bay.

I might just note, in case I didn't mention it last year, that this species seems to have an aerial PCC. Long, hoarse, slight quavering, very little (if any) plaintive quality. Given by pursuer during uninitiated pursuit flights. The pursuer's wing-beats may be slightly deeper than usual, but the difference, if any, is very slight.

Both complete aerial L.C.'s and aerial M notes are quite common. The frequency of the latter, in fact, is very reminiscent of the Herring Gull.

November 26, 1964
 No. 129

There is a large number of birds on the passage west to the sea. It must include several hundred pairs - at the very least. Quite different species for several miles along the coast. Most of the birds are light colored. In fact, I have seen only one dark colored bird. The birds began laying eggs at least several days ago. But the eggs have been collected so badly - the latest occasion being yesterday.

I saw a dead bird on the beach, but I had to put it up, etc., which took time. The birds started to come back almost immediately, but they are still (6:30) rather shy. It is also my impression, incidentally, that this is one of the less active and less excitable species - much less so than the Ring-bill, for instance.

I have heard quite a number of aerial L.C.'s both yesterday and today. The usual form seems to be a 5-note series, each note being very deep, harsh, hoarse, and metallic. "Gyang - Gyang - Gyang - Gyang - Gyang"

or

I do not know what postures or movements accompany this aerial L.C. Perhaps - in some cases - it is given from an inverted or valged flying posture.

Thrustalized aerial pursuits, involving 2 birds, usually rather brief, are very common.

I have seen a number of cases of what appears to be FB. One bird circling around the other. The circling bird is in a posture which varied from a rather curved neck V or E to something lower, almost like an M posture, still with curved neck. Occasionally pecks 2 or 3 times at the circled bird's bill. The circled bird usually

just stands in rather weak V or E posture, turning a little to the circle, and making occasional turning away movements & evasive movements of the head. Once, however, I saw a cuckoo-bird put its head down to ground. It was having manipulated food for the circle. But I couldn't see it well as the whole thing was quite some distance away.



postures of
the cuckoo-bird.

These definitely does seem to be a real V posture in this species, although I haven't seen a very well. First of the ones I have seen have been rather like the posture (a.) of the cuckoo-bird I have drawn above. But the angle of both head & bill obviously varies considerably. I have, for instance, seen two birds facing one another like this:

(I think the carpal joints are out of the pockets, but they are not held out very far.



Very close, sort
of re-sawing back
& forth


I have also had a few glimpses of the L.C. on the ground. It is not very common, and I am still puzzled by the problem of its phases.

The lowest intensity form I have seen is a few notes (2 or 3?) uttered from a semi-V or semi-O (see below), without raising of the wings.

A higher intensity form is given from a posture very much like the one drawn in my third (front view). Wings held straight out and back. The angle of head & neck varies. Always a sort of

Jan 26, 1956 III

(344)



... is usually, appar-
ently accompanied by
app. 5-10 notes. But the
usual L.C. note. Sometimes
one or two addit-
ional notes before these others, (these
primarily, etc. as before, but the last note of the typical aerial
L.C.). Perhaps one or two lower-pitched notes at the end
of the series of 1-5. I don't know if it changes during the utter-
ance of the call. The bird is in a sort of "L" posture and his head
is tilted down to a sort of "L" posture. I don't know how much
slightly too. I don't know if it is a sort of "L" posture (it was
slow and gradual

Yes! Two more birds have done the same thing!
Going from a sort of "O" to a sort of "L". The "L" posture is actually
more like this



Perhaps slightly more extreme
(i.e. head pointed more strongly down-
ward — in some cases — I think)

This "O" type L.C. also seems the commonest display by birds on
ground toward flying birds

During some weak "O's" & L.C.'s the wings are only raised
after the call has begun — and are lowered before the call is over

Lots of Gorts in hostile circumstances

This species seems to be much less apt to give single LCN's, in
the air or on the ground, than most gulls. But I have heard little
bursts of 1, 2, or 3 syllables which must, I think be called as
LCN's. Each syllable or note very brief, bill opened & closed very
quickly. On ground these notes may be given from ordinary relaxed

resting posture, but more often the neck is raised a little and the
premise is an intention movement of O (might as well be a
mov. of V from all one can tell from the movement itself. Have
once seen an LCN given with a brief downward movement of head,
just like "HD" int. moves. of the *Large Larus* gulls.

Have seen a couple of copulation attempts now. Not clear
in all respects, and I missed the probable early preliminaries, but
I did see some things quite clearly.

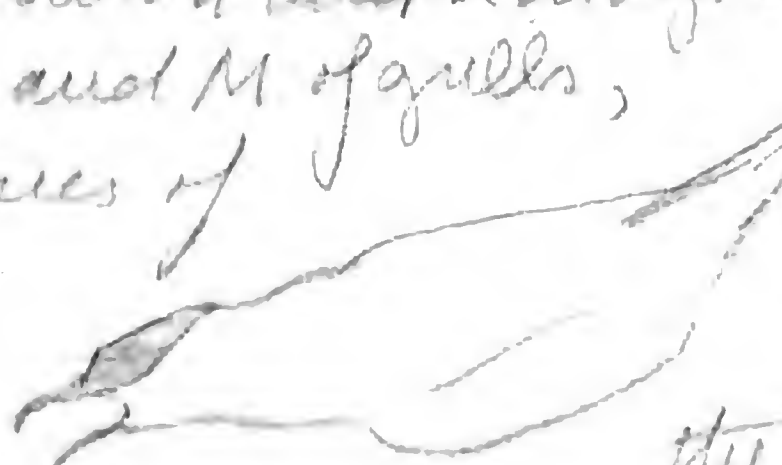
In both cases the ♂ reached more eager than the ♀, but he
still had "to work himself up" with considerable effort before he
could mount successfully.

The ♂ stood beside the ♀, in a more or less V posture,
uttering bursts of Cop Call. This came in waves, getting more intense
and then dying down again.

— — — — — etc. — — — — — Then raised his wings,
began to wave them a little, jumping up into air (mostly vert-
ical at first, but presumably an intention movement of mounting).
These jumps tended to coincide with the most intense bursts of
the call.

♀ usually reluctant, tended to retreat. But then
would go down into H each time ♂ jumped up. Finally ♂
landed on her back. In one case, the cop. was obviously un-
successful; the ♂ just standing on the ♀, waving his wings and
giving the Cop Call, and quietly slipping off. In the other case
the cop may have been successful. Generally similar to the cop
of gulls, but a few differences. In the first place, I noticed that
the call tended to die down when the ♂ actually attempted to
contact cloacas and/or the ♀ stopped moving about. (Is this
further evidence of the hostile nature of the Cop Call. I think so).
He also stopped beating his wings, and lowered them to ground,
still extended, at those moments when I thought contact was taking
place. (I didn't have a good view of his rear, so I can't be
sure about this).

The Cop Call of the ♂ whose cop. was apparently successful
was much as might have been expected. A series of notes, more or

One peculiar performance occurred earlier this morning. I haven't seen it repeated yet. FB had been going on, but when the circled bird uttered an LCN. Cirls retreated a foot or so and just stood throughout the rest of the performance. The bird that had been circled then went down into a diagonal pattern, almost like a cross between the H and M of gulls, necked, and uttered a series of the needy LCN's of  quite a bit - notes just like young gulls!!!! I can't imagine what these could have been - unless they were the M notes of this species.

I have noticed an occasional slight head-movement of begging birds which is reminiscent of the weak T of gulls, so perhaps this species does have a T pattern after all.

The inside of the mouth of these birds seem to be light, milky pink, with perhaps just a touch of lavender. Pencil - the wound of the wounded bird I saw last year.

Can confirm again & again that the usual form of LC on the ground is from O. (There isn't even an "L" in the majority of cases). LC (and partial LC's) seem to be the commonest forms of hostility in the colony - at least now.

Birds often look away from one another during disputes (in V postures) and during MC's (I think), but this seems to be completely unritualized and can hardly be called HF. Obviously just an indication of a relatively strong escape drive.

Rain continuing 10:00 a.m.

A rather confusing incident, which seemed to be a case of a pair joining one another on the ground, then FB, then disputing with neighbours. The initial MC appeared to be LC (in O) - with head & bill held at an angle some 45° - which appears to be typical of almost all extreme V's, and may not be a

(348)

but with some members he approaches


in the case of the school. Feb 12th 1900 and

There are a few other interesting features of this deposit, however, which show some of the I is more particularly important. It was more than an "OL", but it is not a "D".



In some cases, the neck may not have been so high & erect. More like this



This was apparently around -  arrived by the end
of the L.C. (such L.C. is may have included more
than 3 notes. the birds were so distant, and the wind is so bad,
that I could hardly hear any sounds at all).

I should add that I have seen this type of HD (again apparently accompanied by a notes) precede the "typical" \odot in other disputes earlier this morning. Still — there is no doubt but that the HD is relatively rare in this species, as compared with the HD's of the typical "Large Larus" gulls.

There seems to be no doubt but that the most typical M.C. (in these circumstances) is LC (in O - with hardly a trace of "L", if any) followed by V Virginia - just as would be expected.

Still pouring rain 11:30 a.m. Learning myself

Back again 5:00 pm. Rain about stopped. Birds still shy.

skua, Nov. 26, 1956, III.

Noticed that birds landing after the pause very often
proceeded after gave L.C. just after landing. Sometimes this
the "ordinary" O L.C. with approximately 5 notes. At other times
however, (in about 3 cases), the O was preceded by a sort of HD.
Quite brief, but quite extreme. Rather like my first drawing of HD
on preceding page (neck perhaps not quite so high, but bill
pinned back against neck). This was certainly not accompanied
by notes like the O notes. May have been intent. But the bill
was open in at least one case, and it is very possible that one
or two soft notes may have been uttered. The whole thing sounds
very high intensity — almost as if there were so much "pressure"
behind the HD "notes" that they were almost stifled.

Saw one MC. between notes of neutral V. Very extreme.
Neck curved, body diagonal, bill at angle \rightarrow . One bird back
ears out and tail above wing-tips (at angle \leftarrow or \nwarrow).
This latter walked around the other in what was obviously FB.
Pecked at its mate's bill, and went into that M-like posture
drawn on the preceding page. Apparently silent. No trace of T.
The two birds relax fairly quickly.

All my sketches of O are probably too long-necked.

Can confirm that O + L.C. is the usual "high intensity" display
by birds on ground toward flying birds.

When mated birds are walking around one another in V, they
show a whole host of minor orientation reactions, i.e. bending
neck slightly toward or away from partner, looking away from part-
ner. But still no ritualized HF or Greeting.

Watching another copulation. Apparently successful, twice.
Much as before. σ giving Cop Call, eventually with raised wings, a
long time before the first attempt at mounting. Then made a whole
host of mounting attempts (20, at least), slipping off ϕ each time.
Then finally managed to stick. Again saw that call decreased sharply

sketch Nov 26, 1956, TX

(350)

once the male was again mounted. And again by a brief contact of the beaks occurred. Also saw that the female always when making contact. Then he slipped off, got up and again the male ran around her, largely in "M" which sometimes looked like H of quills, and once lifted his tail toward O in what looked like HB. The only thing about the behavior is that she kept her tail way above the wing-tips — then point



After this the male mounted again in the usual way, and

Wing tips extend way beyond the tip of the tail

the copulation is apparently successful. I didn't see the post-cop displays

More rain again 5:45.

✓ before attack, bill like this →, ✓ after attack, bill like this
→ Quite nice. Almost too good to be true.

Post-cop display of O+L.C. — V. by both birds!

Well. At last something nice happened close by. An apparently single bird had fairly long (perhaps 5 minutes) disputes, first with one pair of neighbors and then another. Then a long dispute with another solitary bird (probably one of the first pair with whom he had fought) which was even more intense.

The displays associated with this disputing were entirely O's (+ L.C.) and various forms of "H.D."

The pairs "repelling" the ♂ did almost nothing but chasing O+L.C.'s. He did all or almost all the "H.D.'s."

The lowest intensity form of HD is apparently quite silent. The posture itself is quite extreme, but the bill is closed. Neck moderately

skua, Nov. 26, 1956, I

(35)

erect, but bill pointed right back against neck.

At higher intensities the bill is opened and notes are uttered.

(While the posture remains identical)

These notes are then, high, weak, moderate, short, and "rusty". Might be transcribed as "Heeyah", but essentially un-transcribable.

These HD's, both silent & vocal, were often alternated with typical O's. That is, they often appeared to precede typical O's and/or follow them.

It was quite obvious that the typical HD posture is characterized by tail above wing-tips and wings not raised (The carpal joints are visible during the apparently most extreme HD's, hidden in the less extreme ones). The bird only raised its wings in connection with O's (when an O was followed by an HD, the wings might be raised during the first part of the HD, but they were always lowered as the HD continued).

The number of notes in the vocal HD seemed to be quite variable, (unfixed in the sense of being unfixed). Usually one to three.

The way in which HD's can precede and/or succeed O's would suggest that the connection between them is quite unritualized.

The HD as a whole appears to be a relatively high intensity pattern — particularly the vocal HD. HD's were far commoner during this dispute — the longest I have seen — than during any other dispute I have seen. And it is also obvious that the HD is relatively less aggressive than the O. This single ♂ obviously tended to do O's when facing or advancing toward his opponent(s), switching to HD's (both vocal & silent) whenever he turned away and/or retreated.

In general, the correspondence between this HD (particularly the vocal type) and the HD of gulls is simply amazing. Both the O and the HD of this species are obviously homologous with the corresponding patterns of gulls. (And the "U" probably is too).



The angle of the neck varies to a considerable extent. It is never as much less erect, more forward.

Nov. 26, 1956, II

(352)

range of loud notes. I have seen the flight and wing-raising, which is typical of the notes between loud and quiet. This is interesting, but I don't see any relation to the relative low-intensity notes.



Typical notes are low, and very short-necked.

I might add that the number of notes in a typical O note is variable than I originally thought. I have now heard a lot with at least 7 notes. (All this applies to ground L.C., of course).

And although I have seen a number of O's without wing-raising, these cases are relatively very rare. The wings are usually raised even when the O is fairly short and relatively low intensity.

I think that I had better restrict the term "L.C." to the loud notes characteristic of O.

Circular parading in V certainly seems to be quite typical of mates going one another.

One thing about the FB I have seen has been puzzling me. In quite a number of cases the begging bird has seemed to be the larger of the 2. Do ♂'s FB from ♀'s in this species??

One bird lands beside another. Presumably mates. The landing bird does O+L.C. — V after landing. Its mate just does V. Both V's quite extreme. Circular parading in V. One bird has its tail above its wing-tips. (This tail above wing-tips during circular parading of mates is quite common. I have seen it again & again. I presume it is an indication of hostility, but I suppose that it might be an indication of sex.) Then a little picking match breaks out between the two birds!! Both still in V. One walks away. Both start to preen. The preening movements themselves looked perfectly autochthonous.

sideways preening, flank feathers and (less frequently back - and -
wings). I noticed that the 2 birds tended to face one another at
the intervals between preening movements, and I wondered if this
preening might be "significant" (I have seen quite a lot of similar
or "extraneous" - looking preening in various game birds, both in sit-
uations). Finally one bird walks over and joins the other perfectly
peacefully.

Notice that quite a number of birds have white feathers on the dark
crown (and even on face and neck). I have also seen one or two more
dark phase birds. And I have noticed that the light phase birds
are somewhat variable in other ways. Some of them have much lighter
and more extensive areas of pinkish on breast (and belly).

Pair of birds sleeping peacefully side by side on ground. Then
another bird flies by rather low. Both sitting birds get up, do a
"L" - Oagami! (All this apparently directed toward flying birds) -
and then turn to face one another in extreme V. In the case of
redirection, this).

Leaving myself 8:00 p.m.

Looked at some aerial behavior patterns, mostly L.C.'s, as I
left, when all the birds were flying around excitedly above me.

Aerial L.C.'s can be given from a variety of aerial postures &
movements. From normal flight. From flight with beating wings
in which the wings are jerked upward slightly (on the ordinary upbeats)
with a slight but definite "fluke". From an ordinary glide (usually
descending) with at (more or less horizontal) wings. From a peculiar
glide in which the wings form a pronounced dihedral, like this:

I shall call this V (I think the V may sometimes
be much more pronounced than this - I have caught
brief and unsatisfactory glimpses of it earlier). In none of the
cases I saw tonight was there any actual head posture of the head
as much. At the very most, the neck was stretched forward
a little - and I am even dubious about this.

Alouatta, Nov 26, 1956, XIII.

(354)

... and ... of the birds ... even ...

Alouatta I.

November 27, 1956
Tue Day

This ... over the bird ... up again ... various ...

... a bird ... the sound LC when landing ... With ordinary landing postures or movements, or with wing motions at quite a pronounced dihelical

The swoops at me are usually (but not absolutely, always) with beating wings. The subsequent soars are usually (but again not always) gliding. The swoop is always silent. There may, however, be one brief "stifled" note uttered at the nadir of the performance. This sounds like a stifled LCN (i.e. it is probably identical with a single ALC note — which seem to be nothing more than particularly short LCN's in this species). More frequently still, this single note is uttered after the bird has begun the soar (well after, in some cases, when the bird is at least half way up to the apex).

Most of the pursuit flights are quite silent. Some of them include swoops & soars (all types — but usually "flying" swoops & gliding soars) by the pursuer, and steep descending gliding swoops by both birds (apparently simultaneous).

Once, yesterday, during a swoop performance during a pursuit flight one of the birds (I don't know which) uttered a shrill rattling scream at the nadir of the swoop. Very reminiscent

cut of the means sometimes uttered by gulls in similar circumstances (i.e. probably related to PC) — particularly the "typical Larus" gulls.

Chua I

January 28, 1964
Chua I

Put blind up in new spot, & see a new, common bull in the wind. But the wind increases almost immediately, and I rather doubt that I can do any work today. The birds are flying madly flapping blind — and I doubt if it will stay put very long anyhow. The birds are also very inactive because of the wind.

There are quite a number of perfectly good, rather common V's in which the caudal points are not visible. It is fairly obvious that the V of this species is not very highly specialized — i.e. like the V's of many gulls. (This relative lack of specialization is perhaps reminiscent of seco-line, but the V of the seco-line is still less ritualized.)

I don't think that the angle of the bill in V is quite such a good indication of relative aggressiveness as it is in the V's of most gulls. I have seen birds advance in V, birds which I presumed were relatively aggressive, with the bill at an angle as low as \nearrow or \rightarrow . (It is my impression, in fact, that the higher intensity V's are always or almost always characterized by bill pointing slightly upward.)

I might add that such V's are obviously intimidating. Other birds retreat before birds advancing in V with bill pointed slightly upward. (I have seen this again & again).

One pattern I have seen a great deal of (once on the beach at Punta Arenas and many times here) seems to be very important — but extremely difficult to observe clearly. It often happens when one bird lands beside another, or approaches another too closely. One or both birds will adopt an extreme posture, rather like an extreme V with bill up, but with bill opening widely & closing again.

about Nov. 20, 1952, II

(34)

as a whole, the behavior of the male of this species is very aggressive. It is usually no more than a slight opening of the bill before or during attack when the attack is not preceded by a definite preliminary period of threatening. It also seems to be quite closely related to typical O+L.C. J.E. & often develops into O+L.C. when it does not develop into actual attack. This might suggest that the series of G which seem to be accompanied by soft L.C. notes may be transitional performances rather than "pure" G.

I shall call this pattern G.

It seems to be very aggressive. Often precedes actual attack. (But I should note that there is usually no more than a slight opening of the bill before or during attack when the attack is not preceded by a definite preliminary period of threatening.)

It also seems to be quite closely related to typical O+L.C. J.E. & often develops into O+L.C. when it does not develop into actual attack. This might suggest that the series of G which seem to be accompanied by soft L.C. notes may be transitional performances rather than "pure" G.

I might add in this connection that the U, O, & G patterns of this species seem to be rather less sharply differentiated (in physical form) than the equivalent patterns of many gulls.

Leaving 11:00 a.m.

A note about the physical appearance of more or less typical light-phase birds.

The boundaries of the cap are not very clear, insofar as the whole cheek region (down about as far as the lower line of the lower mandible) is dusky or spotted with dusky.

shua, Nov. 28, 1956

The chin & throat region of some birds is quite new
bright — almost orange

The under tail coverts & lower belly feathers are the same pinkish
buff as the breast & throat. I suppose that this may be significant
in connection with the posture in which the tail is raised.

I think that the "Long Call complex" of this species is about
as good a structural accident as the "Long Call" of many gulls
(and shrikes and terns, of course) as the "Long Call" of the
Dolphin Gull. And yet, the "Long Call complex" (primarily O's) of
this species is quite different from the L.C. of scrobbii. The
complex appears to be relatively simple, while the L.C. of
the Dolphin Gull is a rigid & relatively elaborate performance of
many phases. Does this mean that the "L.C. complex" of the Shua
is more "primitive" than that of the Dolphin Gull? I am
rather inclined to think so.

Back again 5:00 p.m. The wind is more than ever, and it
is absolutely impossible to make decent observations. Que nada!

The typical complete LC is given with bill wide open. No opening
& closing with the syllables.

In the typical complete O posture the wings (at about the re-
gion of the band) meet or almost meet above & behind the back.

It is my impression that the G, although quite high intensity in
some cases, is not usually as much so as the HD. The G does, however,
seem to be quite as high intensity as most of the O's & L.C.'s — at least.

The V's are perhaps commoner than I originally thought. I
was watching a communal area today and I saw quite a few V's.
Many more than I saw among the Dolphin Gulls at Rio Grande.

The hostile behavior of this species appears peculiar, "simple", and
possibly primitive, insofar as all the most common hostile displays,
i.e. V, G, O, & HD, almost appear to be no more than variants of a

24 Nov 28, 1956, II.

(358)

From one end of a pair, starting about 10 yards from its nest, go down into that position - posture described on page 277. It uttered several notes in this posture, unfortunately I couldn't hear a thing. I am sure that the sounds must have been relative weak. It's note immediately ran over to some of this posture's notes, may be the real homologous of the "friend" or serial M complex of note. (I called it that - calling the posture assumed by the bird, which is somewhat like the M of gulls in flight posture - TEM).

Caught a few glimpses of behavior, as I left the blind around 6:00 p.m.

Just after, one bird landed with LC. Set wings in very pronounced dihedral. Posture more or less comme ça:



Then two birds, flying one right after another, (in pursuit flight? or just mates flying together?). Both put their wings up in this pronounced dihedral, and glided quite some distance (descending quite a distance, as well as going forward), while they both uttered complete LC's. (I didn't catch the position of their heads & necks, but I wouldn't be at all surprised if they were similar to the sketch immediately above).

skua I.

November 29, 1956,
Lee Bay.

Around 8:00 a.m., as wind starts to decrease. Find blind rather torn apart, and have to make lengthy repairs. But when I finally get in the birds settle down fairly well.

Aha! One bird of a pair puts its head down to ground, in rather FBM posture, apparently silent, opens bill very widely in what appears to be a requiescent movement, but no food app-

Shua, Nov. 29, 1956 II

ears. Then up into normal standing posture. Then mate ...
first puts head down to ground, opens bill widely in what appears
to be another, equal, silent, regurgite int. move. Again no food.
Mate goes up into equally normal standing posture. Both birds
relax. This was not as complete as it was, rather confirming my
suspicion that FB is mutual in this species.

In the communal area I have just seen quite a few (3 or 4)
O's & L.C.'s in which the O developed into a quite noticeable "L".
In one case, the "L" was about as extreme as the L of the Northern
Shua I drew in my thesis.

One "O" was most peculiar
Head back. Possibly directed at
flying bird

This was obviously
abnormal -- I think



Wings not
raised

One bird did its whole L.C. in quite a pronounced L!

I think the O posture is more aggressive than L. It seems to
precede attack more often (and is, of course, a better position from
which to launch an attack). I have also noticed that birds after
attack, or after being attacked, will often go into an "L" posture
which is quite extreme, often reminiscent of the "real" HD of gulls.

Angle of head & neck comme ça, in extreme cases (I think
that I better call the pattern I have been terming "HD" in this
species so far SHD — specifying whether or not it is silent or ac-
companied by soft notes). The L.C. HD (as I shall call it if it deserves
a name) would thus seem to be characteristic of the same situation as
the HD of gulls (of the "typical large Larus" type).

I can confirm, again & again that O (& L, in some cases) &
L.C. is the usual display by birds on ground toward flying birds.

skua, Nov. 27, 1956, III.

360

... I had seen one
... of a typical L.C.
... I had seen one
... I had seen one

... I have seen several birds
... sitting on the ground and open bill
... at another bird coming too close
... I have seen several birds
... the fact that
... I have seen several birds

Wind coming up again 9:13 a.m. Blue sky

Bill up posture is kept open throughout the L.C. the mandible
do, in some cases, tend to approach a separate (slightly) in rhythm
with the notes. Otherwise rare, however.

Ordinary Gulls are quite rare. This is certainly not one of the
species which has caused Gulls to a high development.

A few very long L.C. (8 to 10 syllables — which is not
really very unusual) in which the sequence of postures was L.C. HD — O.

Even birds retreating as V tend to do so in a posture indistinguishable
from the V postures used in advancing. (And I think that
retreating birds tend to attack, or at least to act, in offensive threat
birds, in obvious reduction). In other words, there does not
seem to be a real anxiety V in this species comparable to the anxiety
V's of most gulls or the H of terns. (This may be significant in
connection with the "bill up" posture of so many aggressive V's).

MC, apparently greeting landing bird. q did L.C. in
O — long L.C. HD. ♂ did L.C. in simple O.

I can confirm that O → L is the usual sequence of postures

during LC's, but there are quite a lot of conspicuous.

Another copulation. Much as before, except that I didn't see any preliminaries at all. When it finished, after a apparently successful contacts of obvious, he began to posture again more Cop Call. Noticed that the bird remained wide open throughout the call, no opening & closing of mandibles in rhythm with notes, while it continued to circle, in well down to the ground posture:

Rather reminiscent of FBM.

Then both go up into a very weak V. ♂ begins to preen

(apparently quite ritualized, almost immediately). It is certainly my impression that this species has very little in the way of standardized hostile post cop displays.



One bird of a pair begins to FB from note. Cuckles note in FBM posture. Cuckled bird puts head down to ground twice and again, as if about to regurge, bill wide open, but no food appears. And then, surprisingly enough, the cuckling bird, still in FBM, shows a "hump" in back, opens bill briefly, as if about to regurge itself, but again no food appears. Then the cuckled bird goes up into a sort of V, begins cop call. Cuckling bird goes into H, tail up. Cuckled bird mounts. Usual copulation behavior, but the cop is obviously unsuccessful. When the mounted bird finally slips off, "he" continues Cop Call for a while, then begins to preen, apparently unconcerned. The bird playing the ♀ role continues to circle its mate, in H and FBM with tail raised, eventually goes up into V, very weak, (these post-cop V's are hardly more than an "alert posture"), eventually relaxes.

If this was the ♂ who mounted the ♀, he appeared smaller than she did.

Perfectly good, quite loud, LCN's can be given from perfectly ritualized postures. Any birds disturbed by a sudden movement of the blood, for instance.

St. Louis, Nov. 27, 1954, V.

(362)

part of a pair - one seems to be an adult male, the other a female. They are both young, active, and are uttering a series of weak notes, which are not as loud as those of the adult male. They are both sitting on the ground, with the male on the left and the female on the right. They are both looking towards the camera. The male is uttering a series of weak notes, which are not as loud as those of the adult male. The female is also uttering a series of weak notes, which are not as loud as those of the adult male. They are both sitting on the ground, with the male on the left and the female on the right. They are both looking towards the camera.

Another single bird approached what I presumed to be a nest or potential nest site, uttering a series of weak notes which I couldn't hear, in MH postures and postures which looked rather like L.C. HD, without the wings raised (!), in alternation. This performance was probably M too, but I certainly can't be sure about it.

One bird of pair approaches another. They both utter a series of brief, relatively weak, hoarse & "rusty" notes, in ordinary unritualized sitting postures, standing postures, and perhaps a trace of weak MH. What are these notes. LCN's? hardly.

One bird walks through communal area alternating V's (bill pointed quite far upward and L.C.'s in O, without raising wings, although carpal joints are quite far out), tail below wing tips or raised very little above them. He was obviously very aggressive. All the other birds retreated before him - precipitately. I think that these O's without wing-raising were not only very aggressive, but also quite high intensity - appearing to be quite as high intensity as the usual O's with wing-raising.

In this connection, it should be remembered that birds will often begin L.C. in O without wing-raising, for the first note or so, then raise wings still in O, then punch L.C. in L" with wings still

Shrew, Nov. 29, 1954. VI

raised. Is this a series of relatively declining assemblages?

One bird after attack assumes an extreme L.C. HD.

He looked quite like the HD of such gulls as the Ring-billed and the Herring Gull.



Near Cop Call in distance, look up to see ♂ just standing at Q's back. Then he stands beside her in U, giving more Cop Call. She just stands and does repeated, rather extreme, Q-stance. At first in posture comes a ground. Then in posture he neck stretches forward. ♂ just continues Cop Call, in unusual way. Q as - then ♂ hops on, off again, repeated several times, until a final, assumes H with tail raised. Copulation apparently successful. Much as before. Then ♂ slips off. ♂ does Cop Call for a few more seconds, then U. Q does U-G - attacks ♂. ♂ retreats in U. Q stands in U. Both relax eventually.



will almost touching

more like F.B.M.

as well as down

extremely "begging" hoppers

uses H, without tail raised

During this Copulation, the Q made more attempt to resist than most of the Q's I have watched here. Her attempts took the form of vigorous upward & backward jabs. Some of these looked rather like the T-movements of gulls, but they were apparently silent. In any case, their vigorously aggressive nature was quite apparent. I am now convinced that the rather T-like movements I have seen performed by Q's during other cops - and I have seen quite a lot - were the same thing. I am also convinced that this species has no real T pattern. The T-like movements I have seen during some FB were probably sheer "coincidence" (i.e. the begging bird merely jabbing up at its mate's bill.)

Leaving 11:45 a.m. Watching aerial behavior as I go, and see quite a lot.

shua, Nov 29, 1956, VII

364

I also saw one again but did not seem to hear anything except a note or two.

I can also confirm again & again that most of the swoops, both intra- and inter-specific, are silent. But this time there were a few exceptions.

One bird swooping at me gave a call's first as it approached the water. Rhythmic course ca ———. The first note was a perfectly typical L.C. of the ———. The second was loud, deep, & somewhat surprising, but still deep, loud, and low, like a "ha" or "ho" note. (I have heard a note between the ordinary L.C. and the high, shrill, noisy note I heard a few days ago.)

Then — much more interesting — I watched a long pursuit flight between 2 birds (possibly, I suppose, redaction provoked by my presence). This included at least 3 conventional swoop — chase performances (I am still not sure if these movements are ritualized or not in this species). And, at about the nadir of the swoops, one or both birds gave a burst of rapid, regular, clear notes: "Ka ha ha ha ha ha ha ha" sort of thing. Rhythmic about like ———. Sounded rather like L.C. of "typical large Larus" gulls, except that this faded out in a way that the L.C.'s never do. Is this Glik? (I couldn't see which bird was giving the call if only one was. In one case, I thought the pursued. In any case, neither bird went into any obvious unusual ritualized posture.)

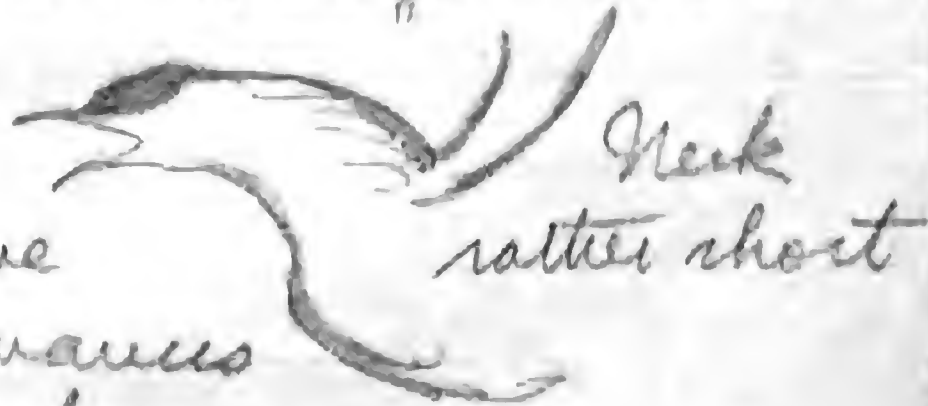
I heard this 3 times — very clearly.

I also saw one quite clear case of 2 birds, close together, presumably mates, giving aerial L.C. in V-glide. Wings like this:

Quite clear O

Head & neck apparently like this.

This brings up another point. I have seen few or no aerial L.C. & V-glide performances directed toward me. Some of them may have been provoked by me, but, if so, redacted either upon other birds or



in pairs. Usually given more or less simultaneously, by 2 birds flying close together.

The earlier mention of possible glide resembles another thing. It is perhaps remarkable that I have seen no hostile displays of apparently higher intensity than the "LC complex" (in the broadest sense) patterns. It is true that the real territories are far apart. (and I have seen very little in the way of real boundary disputes. but I would have expected to see some trace of something in the course of the disputes in the communal area.

Back 8:00 pm. Watching aerial behavior again as I approach.

A few more notes about the aerial LC and V-glides. It is occasionally performed by a single bird, and sometimes flying alone (in group) when disturbed by me. Significant enough, I have never seen an LC - V glide performance associated with swoops & loams, either at me, or during intra-specific pursuit flights. This proves, I think, that it is not among the most aggressive (or most "anxiety") patterns.

The swoops & loams themselves are quite as ritualized as those of the B. h. g. Very fast, both of them. Swoop very smooth.

The long descending glides performed by 2 birds together during pursuit flights occur, I think, when the pursued tries to evade. - the pursued stoops & the pursuer follows. (None of these glides, incidentally, show any trace of a V).

There is no doubt but that the Oportures without wings raised (with LC, or LCN or G) are more aggressive than the Oportures with wings raised. And the former are far more intimidating too.

The least aggressive forms of V, the nearest thing to an aux. V in this species, are characterized by a relatively thin neck, at the top, (and possibly by a more or less level bill).

Shua, Nov. 29, 1956, IX.

(366)

...any that this species has been like in the way of an
"agitated" posture. But on the other hand, it looks a posture which
is not at all of the "agitated" type, but it also seems to
be a little in the way of an "agitated" posture. (I think it is the most
likely that this posture is a "posture" which resembles
the "agitated" posture in general form but which "took the place"
of the "agitated" posture. That is, it is a posture which is
derived by retreating birds — such as the "agitated" posture, al-
though actually not such a posture.)

...the same birds played the same game as before. (Again the ♀
was in the "agitated" posture. But I am fairly sure of their sexes now.)
I began by standing in front of ♀ in V, giving Cop. Call. Then
she began to move in FBM (again quite silent). I stopped Cop. Call,
made coarse movements, turning the way so that I finally put
head down to ground and actually threw up food. ♀ gobbed it
eagerly. I went back into V & Cop. Call. ♀ up into V, did several
G's, and made pecking out moves toward the ♂. These G's were
apparently quite silent (and the pecking out moves more than 10 yds away),
except once when a single G seemed to be accompanied by a very
loud high-pitched squeak. The ♀'s posture during these G's was
not very ritualized, just neck up, head & bill inclined slightly
upward. Head occasionally turned to face ♂. The ♂ finally mounted
after several futile attempts as usual. ♀ went into H but refused
to mate. ♂ put rat on her back, giving Cop. Call, while ♀
occasionally jabbed up at him. I noticed that whenever his Cop.
Call declined in intensity, the notes tended to become low and
"muted" — just like the Cop. Call I heard one ♂ give Monday,
and like the presumed LCN's (?) — see p. 362 — I heard 2 birds
(the same pair in fact) give this morning. Is this low, muted, quality
merely a sign of low intensity? The ♂ soon slides off without
having accomplished anything. ♂ stands in V. ♀ goes up into
V, does G's, attacks ♂.

I should add, before I forget, that once this morning, when

there was always hostility between the members of a pair. Both birds did a lot of that suspicious-looking, although quite ritualized sideways preening.

Watching a pair for quite a long time, a different pair from ones I watched earlier. First approached one another in extreme V. Then the preened ♀. Again looked larger than her mate, and had white flecks all over her head & neck & wings — just like a ♀ I watched this morning. Began FB frontally. Head down & just slowly head & regurgitated. ♂ fed eagerly. Then both V. Gort repeatedly. PAG's repeatedly. Some of these PAG's followed by L's, as if the whole thing were a court performance. Then ♂ flew away. Went into MH, apparently indicating a site. Then ♂ flew around several other places doing same thing. ♀ also went several places, did same thing, and once settled on one site with some slight indications of settlement — nest movements. Both birds occasionally uttered soft huckle notes, in both ordinary standing & sitting postures, and MH. The former certainly looked as if they might be "rusty" L's. Occasionally one of the birds would fly over to join another. Once ♀ immediately began FB, and ♂ fed her again. At other times there was no display at all, or V by one or both birds. Both birds did occasional quite unritualized looking Gorts & PAG's throughout the whole complex performance. Both eventually fly off.

This whole thing certainly looked like nest-site selection. And one of its most interesting features was the obvious complete absence of Choking.

Some ♂'s standing beside ♀, giving Cop Call before copulation attempts, assume an O posture (rather than a V), with wings raised, just like the O during L.C.'s. Further evidence of the hostile nature of the Cop Call?

Extreme "L" can be like this
L of gulls. But this is very rare.



Almost like the

sl. 1936, Th.

368

the birds look heavier than mine

I know a big deal this afternoon I saw a male
with a lot of L.C. perform even on the ground accompanied by
I → extreme ... that I am tempted
to call this the ... performance

even the ... seems to be ... than
many of the other ...

The ... in the way of
... (standardized post-cop display)
If there is a ... it is usually
mutual U. (One or both birds may look away, or look from
side to side but this is so weak and indefinite as to hardly sug-
gest even the unritualized precursor of HF)

One bird ... stands in V while latter
... goes into V, pulls the
original bird who had ... then does
two furious bursts of PAG at ground.

Watching what appears to be communal area in distance.
Lots of fighting & threatening. Then 2 birds fly up in pursuit
flight followed by 2 others who join in same pursuit flight.
Fast furious & long-sustained. Actual movements much as
previously described. Lots of simultaneous descending glides;
few or no swoops & fears. Lots of quick evasive shifts & twists
& shakes by the pursued. The original pursued maintains its role
for a long time, but then I think changes role to pursuer. By
this time some of the birds had begun to drop out, while new
birds flew up to join in. All very confused. Breaks up into sep-
arate 2-bird pursuit flights, which eventually break up in turn
and settle, some on the communal area where it all started.

Well! At last what might be considered a high - w
boundary dispute broke out quite nearby.

First thing I notice is a terrific aerial fight right over the blind. Then one of the birds, one who had been attacked & landed. This is one of the pairs in which the ♂ had fed the ♀ and been attacked for its pains - described on preceding page. I think this bird that landed first was the ♀. Call it A₁ and its mate A₂. A₂ landed almost as soon as A₁, and another bird B₁ landed nearby at same time. B₁ was eventually joined by its mate B₂.

The first thing A₁ did after landing was O + L.C. → SHD (with weak soft, rather rusty and at the same time squeaky, high pitched notes). This type of performance, which was repeated several times by several birds later on confirms my belief that many of things that look like L.C.H.D. from a distance are really SHD, and the real L.C.H.D.'s may be nothing more than intermediates between the SHD and the O (or "L") & L.C.

Then the real became general. Long dispute. But no actual attacks between the pairs. Noted several points of interest.

Some apparently typical O's & L's, wing wings raised and without, were accompanied by notes much higher pitched & squeaker than usual L.C. notes. Sounded transitional to SHD notes.

(Which reminds me. I wonder if similar high pitched squeals accompany many of the G's ???)

If this SHD, etc., sound needs a name I shall call it the Rusty Squeak (RSq).

There were many typical O + L.C. performances during the dispute, and it was noticeable that whenever there was a general burst of O performances, of any kind, the mates of each pair turned, or twisted their necks, to face one another. Obvious reduction.

Even more obvious reduction. A₁ often pecked its mate, particularly after vigorous bursts of displaying with the B's.

Even more interesting reduction! Real honest-to-goodness grass-pulling - the first I have ever seen in any species! All by A₁. Vigorous pecking at ground, and equally vigorous pulling up of plant material. Most of this was just dropped, but some was

... movement
... was ... by ...
... And some G's ...
... — ...

... apparently high-movement — perhaps as high as ...

V's and ... were relatively ...

... correlated with the ...

A, showed F's and F's ... but so rarely a brief ... that I have no idea if they were ritualized or not.

Finally, it might be noted that I think the ♀'s of both pairs were the most vigorous during this dispute.

After this dispute, while my attention was distracted elsewhere, I heard a burst of the "juvenile" "gull-type" notes, and looked up to find that a negotiation and feeding had taken place at A. Further evidence that this is the equivalent of the M call of gulls.

Leaving 8:20 p.m. Watching for more aerial behavior

Saw another L.C. — V glide performance, by an apparently single bird, in which the head & neck were held in weak O.

Noted that when birds swoop some distance away from me, they may utter a single brief note, rather intermediate between LCN and ab.C. notes (if there are such things as the latter, which I am almost beginning to doubt) during the swoop itself.

Again noticed the tendency to give L.C. as a landing call. (It is surprising incidentally that I haven't heard LCN's used as landing call — probably coincidence, or else I have just overlooked them).

November
For today

Arrive birds 10:00 a.m. Wind much stronger. Birds coming apart at the seams.

Waiting for more boundary disputes.

One bird (probably A1 again) does more GP.

There were a lot of boundary disputes in distance. Difficult to see well. There was certainly a lot of PAC or GP. And a great many Gasts, quite variable in physical form. Obviously not actualized under morphological sense. But there is no doubt that Gasts are frequent and important in this species. Some indications that they themselves are ritualizations. The reason I overlooked them earlier is that I was primarily watching the low-intensity, communal and disputative. The Gasts of this species, rather than those of most other species, are an indication of high-intensity conflict. (Probably related to both GP (+ PAC) and SHD). All sorts of intermediate forms.

I saw several cases of precipitate retreat in *Al. marinus* - several + LC. Quite significant this, I think.

It was noticeable how often a running charge or retreat ended in a Gast. This would indicate that the Gasts themselves may be produced by fairly strong motivation. It also indicates that the Gasts of this species may "take the place" of the HD's of some gulls.

One peculiarity of the boundary disputes of this species are their frequent long-distance nature. Two birds may be 10 yds apart, and still react instantly & vigorously to the slightest movement by each other.

And silent patterns, or very soft ones, (GP, PAC, Gast, SHD) are quite frequent during their long-distance hostilities.

This MC of mutual O (+ slight "L") + LC. — U

Interesting hostility between the members of an apparent pair. ♀ lands, does O → "L" + LC to ♂ who lands right afterwards, right beside her. Then both stand in extreme U. (This is probably, I

Sample 1001's (low intensity) seem an exceptionally good
(except for a slight stretching up of the neck) - low, low
intensity displays of birds on ground towards flying birds.

In some cases the dark cap comes down to the lower part of the
lower mandibles, but this is rather variable. The buff is only along the
lower side of the chin in front.



One form of SHD is like this
Head quite far down, further than
in my drawing in my sketch book.

Leaving 11:45 a.m. Everything round asleep.

Heard another of the "pile" calls in the air. Hearing a bird
aerial flight. At least it was a call (but it struck me that
these notes are less abrupt, less sharply cut off, than the syllab-
les of the "typical large Larks" at C's).

The sudden steep descents by two birds during a pursuit
flight may be flying instead of gliding.

Back 4:15. Everything still happily asleep.

This species may have a trace of a Silent Panic pattern, but only
a trace. They usually just take off and circle in an un-panic-
stricken fashion. Presumably correlated with their better means of defence.

Another fairly intense boundary fight. Watching another pair
birds A (possibly B) Much as yesterday, but no actual GP (PAC's
instead, very vigorous, followed by L's). Noticed single soft note
(possibly something like RSy given from same SHD posture as the one
drawn above on this same page). And once, when dispute was at its
most intense, the ♂ turned to his mate, G'd, and pecked her.
(It seems to me that this species has specialized in resolution of at-
tacks on mate during high-intensity disputes).

Shua, Nov. 30, 1956, IV

(374)

[illegible]

and notes the
adults with multiphonic such performance
is that I don't hear the call (it is presumably
one of the rusty weak ICH's - or
possibly the "juvenile gull-type" call),
and that if only one bird of pair does it, the only response by
partner (and responses are none too frequent) is a return perfor-
mance of the same thing

The end of a pavement flight is usually marked by a soar, as usual.

Some birds seem to be sitting down, and having "H R"s, just as if they were incubating.

Again another case of bird landing with L.C. in extreme L.C.
HD and V-glide. This is particularly common when bird joins mate.

Again see a pursuit flight in which at least 4 birds took part

Comm.
Alca.

Beginning 6:30 p.m. G. O-L. L-O-L-V. V.V.O. SHD before attack - SHD between attacks - SHD after attacks. Gost. V.V. O before attack - O after attack O after being attacked - L C HD before attack. O-L C HD V-G V.V.V. O before attack - O after attack - O before attack - Bud in O attacked O before attack - SHD after attack Gost after escape V LCN. G. G before attack -

Aug. Nov 22 1956 II

(376)

and ... down

The bird does SHD (possibly with soft sound), it flies very far down and ... to mate as latter comes down to land ... it ... the displaying bird ... the ♀. ... was followed ... by ...

Leaving 8:05 p.m.

... 1, 2, or 3 notes. In this ... the vocalization was a mothered L.C. May be true in all cases, for all I know.

Heard one bird give a very squeaky RSq as it dodged the swoop of another bird. Heard still another bird give a very nutty RSq just as it swooped at yet another.

*
common area
NOTE. I am classifying these displays on a very rough basis. EG LCN for anything that sounds like a single L.C. note, or looks as if it should be accompanied by such a note. Making no real attempt to determine if "G" and "SHD" are really silent or not.

This brief & rough counting today has revealed quite a number of things I overlooked before; e.g. the frequency of SHD's in low intensity hostile situations.

More important, it has demonstrated the remarkable rarity of LCN's in this species. Quite incredible, really. (Why I didn't notice this before I can't imagine). I am not sure, in fact, that this species really has a "real" LCN at all. The things I have been classifying as LCN's may have been mothered LC's, RSq's, G's, or (in the air) a form of Al.C. note.

Another very surprising feature is the remarkable number of attacks, particularly attacks annotated with display. This seems to be one of the most characteristic features of the species.

344

111

November 1, 1956
Dear Henry


Common
area

64.

130

Watching FB & regurgitation taking place quite near bed. Much as before, but a few points of considerable interest. The ♂ regurgitated at least 5 times. The ♀ was quite silent throughout the performance (this is definite). She made only one "T movement", an upward toss, toward the ♂'s bill, from FBM, and this too was silent. (But I am becoming convinced that this is definitely related to the T of gulls. It is so similar in physical form. It must be either vertical, or, more probably (?), the little ritualized precursor of "real" T. The ♂ was also silent, except for occasional brief notes (from U). I didn't hear all of these — so some of them may have been RSq's — but some of them were just like the notes of the L.C. in quality, although much briefer. So this species may be said to have a trace of a "real" LCN after all!

348

12. 12. 1971

150

12-14A

11

10

255

And now a few general reflections.

One thing about the 50% active pair. A1 and A2. A1 and another bird which I couldn't identify. A1 is the only bird I have seen doing really "intense" CF, in the form of side pulls and sideways turning movements. A2 has been seen with birds PAB in groups, & repeatedly, eating plant material & pulling it and shaking it (i.e. which is, of course, a form of pulling). I think that A1's behavior can be completely an individual personality. It is probable, only that she gets more "wrought up" than any other bird I have been watching.

Most of the ♀'s of the pairs near the hole have been displaying more aggressive, during boundary disputes, than their ♂'s.

Most of the ♀'s are also white-fleshed, while the ♂'s are not.

Back 5:00 pm (after a terrific bird storm, which has been over)

Comm area

V.V.V.V.V. G. Gert. Gert. V-G before attack - G between attacks - V after attack - Bird in V attacked - V after being attacked V.V.V.V.V. G before attack - V after attack V.V. V-LCH-LCH. O-L. O-O V-O-L. G-V. G. O-L-PAG. L. Gert. PAG. V. O-V-G. V. V. V-V. O before attack. O-L after attack V-G. O-V. V.V. V-O-L-V. O. O after attack. V-G before attack - G after attack - Bird in V attacked - V LCH. V.V. V. O-L-V-LCHD-O-L-V before attack - V after attack V-G-V. V after attack - G-V. V.V. V-O-L. V-G before attack - G after attack Bird in G attacked - PAG after being attacked V.V.V. V. O before attack. V after attack. V-G before attack - V after attack - V before attack. V before attack - V after attack - V-G before attack - V after attack. V before attack - V after attack. V before escape. V during escape. V after escape. G. V. L after attack SHD after escape V.V. V. V-G before attack - V after attack. V.V. V-O-L-LCHD-SHD before attack V-SHD. V-G before attack - V after attack - G before attack - V after attack V-LCH-LCH LCHD. Volving escape V-LCH-V before escape V-Gert. V.V. V before escape. V after attack - Gert. V. O-L-FH. V-SHD-V. O-LCHD-V.V.V. V-LCH-V. O before attack - O after attack - SHD V.V.

317

353

346

... to the most ... of the ...
 ... I can ... to ...
 ...

One little ... of the night on ground. Involved ...
 ... the pursued (who just followed of-
 ... but could not ...
 ... the pursued and the pursuer ...
 ... more separate ... than the
 ... long
 ... some
 ... after the pursuit
 ... the pursued and its
 ... with an abbreviated but quite recogniz-
 ... LC and V-glides.

*
 comm area
 V-V-V-V-G before attack - V after attack V-O-L V-O-L V-O-L
 LCN. V before attack - V after attack - End in get attached - O-L
 after escape O-L V-O before escape V V-O-L-LCN LCN L-O
 LCN LCN O-L-V V-L V-LCN O-L V O-L V O-LC-HD-V V-O-V
 G before attack V-O O-L V-Lsh V-LCN before attack - Got after
 attack V-O-L-V V-V-V O-L-V O-L-V O-LC-HD-V O-LC-HD-
 V-O-O-O O-LC-HD-SHD LCN-sh G-O-O-L-sh V-LCN-O V-
 G before attack - V after attack - sh L-O-L V-V LCN V-V V-L-O
 sh V-V L-O-V V-V Ending count 7:00 p.m. 514

... has been very obvious during the counts today.
 When there was a lot of fighting going on in the communal area, there
 is hardly anything but V's and G's. It is when there is a lot of
 displaying and little actual attacking that one sees all the LC's.

An explanation about what I am counting as attacks might
 be useful. This is not one of the species which is particularly likely to
 fly up to deliver a downward attack, (although many such attacks
 do occur). An aggressive bird is far more apt to stand face to face
 with its opponent and deliver a sudden forward and upward ...

I have counted such falls as actual attacks. The whole attack behavior of these birds is quite reminiscent of the large Lawes Quail. (With the same movements as before, the apparent complete absence of U and U motions). I have only seen one or two cases, in the communal area, of one bird reaching over and pulling the wing feathers of another bird — which was itself engaged in a dispute with still a third bird — very briefly and rather tentatively.

Connections. I am not sure that there is any morphological difference at all between the most aggressive and least aggressive forms of U in this species. Aggressive birds very often go into a full U (with the top of the neck quite thin) U before G and attacking. And I have seen plenty of birds retreat in U's with bill down, outstretched.

(It is doubtful if, in fact, if the general rule that threat postures with bill pointed down are more aggressive than threat postures with bill horizontal or inclined upward really applies to this species — at least as far as the low and moderate intensity displays are concerned. This apparent anomaly is presumably connected with the frequency of forward and upward falls as attacks).

I have been watching for signs of pair-formation in this communal area — without success. Later stages of pairing are quite obvious. I have seen plenty of cases of obvious MC's, followed by circular parading, FB, regurgitation and even copulations.

There have been a number of rather enigmatic cases which are a little more difficult to interpret. One bird approaching another, in U, parading around one another, sticking together for a while, perhaps showing other mutual hostile displays and other forms of hostility. There could be the first signs of pair-formation, I suppose, but they never seem to lead to anything. Both birds allow one or both flies away.

The great trouble, of course, is that so many of the brief hostile encounters in this area: U's (perhaps preceded or interspersed with L.C. patterns), even when accompanied by G's and actual attacks (and even a trace of SHD), are indistinguishable from a lot of the MC's I have seen on territories — and I am quite certain that many

Льва Дк. 1, 1956, VI

362

Shen, L.

December 2, 1956,
Lee Bay

Arrive 9:20 a.m. Wind as bad as ever.

*
 common area
 Starting 9.35. O-L-Isr. V.V.V. V-O-L V-O V-O-L V-O V-O
 before attack - after attack - Bird in V attacked - after being attacked
 LCN. O-V. V-L V-V Isr. Gost C-LCHD Gost. LCN-LCN-G Gost
 after escape - V-G before attack - after attack - Bird in Gost attacked -
 Gost after escape. LCN. V-V LCN. G-O. Volving escape L-O-V V-O before
 attack - after attack - G before attack - G between attacks - G between
 attacks - after attack - Bird in V attacked - Bird in V attacked - Bird
 in V attacked - Bird in V attacked V-G before attack - O after attack -
 Bird in V attacked - after being attacked V-SHD V-SHD V-SHD V.
 V-SHD V-SHD V. O-L-V V-Gost Gost LCHD V-LCHD after attack
 V.V. V-LCN-V V V-O-V V V-LCHD Ending 10.15. 103.

Leaving 10.30 a.m. Nothing doing. going to try to take down the blind.

Lawrence
Saw one bird of a pair disturbed at nest to go in air
with V-glide and extreme HD

scoreellii, L.

December 1956
Pointe Gaudet

Arrived at a place — at last — just after a man had
taken all the eggs! The birds were in a dreadfully disturbed state
and I could only stay a minute.

The general conclusion I came to after this brief visit was
that there was little new that I missed at Namote. No gls or
ch. (And there were some violent fights between the disturbed
birds — which were flying about, or standing about in groups beside
the colony).

A number of PAG's by birds in these groups. Some intense
V's. Merged with all sorts of other hostile patterns, including high and
moderate intensity ones. These PAG's certainly looked very tense and
high intensity. (I also saw some very nervous-looking Pr.).

The commonest display of birds on the ground was a form of LCN.
Delivered from aux. V posture, bill opening & closing with each note.
Each note was single, rather higher in pitch, purer in tone, and lower
or than the ordinary LCN's. These were probably the homologues of the
"Shill LCN's" of the Ring-bill.

Actually listening to the birds on the ground and in the air, I
have a much better idea of what the potential range of variation of the
LCN's is. There is the ordinary LCN, the Shill LCN's, and then the
particularly harsh notes, singles, doublets or triplets, which may be
called the "Alarm LCN's". (I noticed particularly one bird flying over
my head giving doublets very reminiscent of the AlC's of other gulls).
The LCN complex of this species appears to be relatively undivided.

December 4, 1956
 Puerto Grande

A few birds flew over me today, while I was watching ducks, and I noted a few aerial calls.

This species of bird has a very loud & clear OC. Long, drawn-out notes. Downy notes, and sweeps & fears (both at me and at other gulls).

It also seems to have a loud & unclear aerial LC. A few notes, comme ça —————

Hardly more than a series of notes, but given from quite an extreme aerial O, or a series of the most exaggerated aerial O's of the P.B. G.

I also heard a few single LCN's, and series of approximately identical LCN's, which were given from an equally extreme aerial O.

allus, I

(385)

January 13, 1957
Moto Hui

There are at least 3 pairs on the island now, probably 4.
C. hawaiiensis (or C. hawaiiensis) were more inactive, if possible. Must
asleep in the morning.

Three birds on the island. One pair of Polynesian
Call. One bird on the island. One bird on the island. One bird on the island.
All birds on the island. One bird on the island. One bird on the island.

Well, except for some of M.C.'s when one bird for pair for
up in the air on the ground. The only thing I have seen is one bird by
one bird.

One pair flew back and forth over the island for a long time,
apparently maneuvering to land. The way bird came fish cross-wise
in bill. I saw what happened when and if
they landed. I saw that their flight was
largely silent (at least) and that they showed no trace of a ritual
up of fish flight.

Three birds just flew over my cave. Apparently hostile
toward one another. Whole burst of repeated Polynesian calls
(P.C.'s). One very long call, including at least 20 syllables.
Bird giving two from dihedral, bent wing, glide posture rather
like V-glide of terns (but head & neck as in normal flight).
Other birds gave their P.C.'s during normal flight.

All these P.C.'s were particularly reminiscent of the SCW of
the Brown Noddy.

allus.

January 14, 1957,
Moto Hui

A few of these birds around quite early in the morning.
(First seen around 5:00 a.m.)

Jan 14, 1957

Watching one solitary bird when it comes in and comes in to land.

The mate gives some PC as it comes in. It is a glide part of the time, a definite V-glide. Head is held as if it were less downward. I suspect the bird of this feature is a sign of retreat, at least part of the landing movement.

This was answered by bird on ground with another long PC. At least part of this is a definite Gost. (Bill seemed to be opening & closing with each syllable)

After a while bird lands it stands in about posture (possibly alarmed by me). It still is in silent Gost.

Mate later gives PC from Gost posture

Later on, there are 2 more examples of the long PC in the birds. In one case, one of the birds was in Gost, the other in normal sitting posture (neck quite retracted, head more or less horizontal). In the other case, both birds were in normal sitting posture. In both cases, closing of bill with each syllable quite noticeable in all cases. The bird who was in the normal sitting posture for both PC's, half lifted the wings each time.



I am beginning to think that this PC (and the similar SCW of the Brown Noddy) must be almost completely homologous with the L.C. of gulls.

Another case of PC as PC! I didn't catch postures this time, but the sounds were clear.

The PC also seems to be the 'Landing Call'. Have just heard it given by single bird landing some distance away from, but well in sight of, a pair on ground.

allus Jan 14, 1957 II

(387)

allus, Jan 14, 1957 II

allus at this is a typical
allus - long tail

The look of the birds
in flock is very
Very fat, round, round
in front. Long thin tail
rest of body. Long thin wings, rather
rounded at tip



I should be surprised if these birds are at the very beginning of the breeding season stage. Pairs have definite relationships, one far apart from one another, on little outcrops of rock on top of island. Tend to stay there for 2 or 3 hours during morning and mid-day. And single birds, probably mated birds waiting for their mates, tend to do the same thing at same times.

I have seen 5 birds fly over in a flock when 4 birds were visible on ground. So there are at least 7 around

allus.

January 15, 1957
Morotai

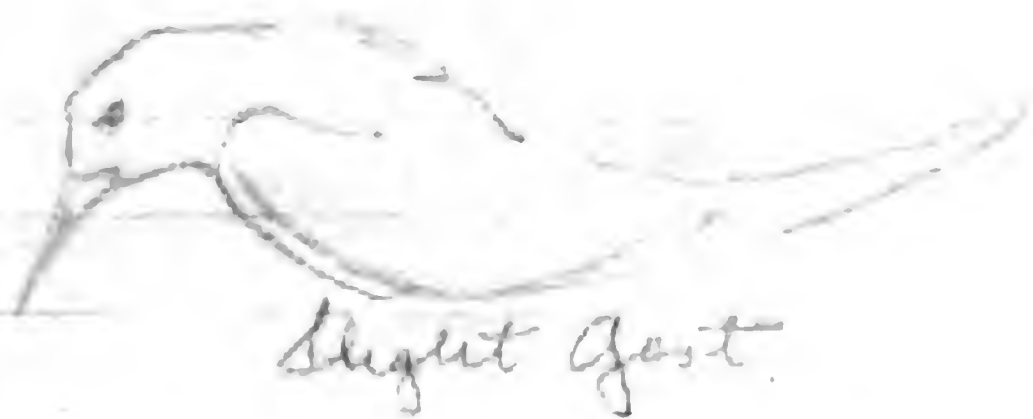
Watching a pair, half asleep side by side. One of the birds occasionally gives an Loh (probably autochthonous) or makes some other little movement which causes it to brush against the cheek of its mate. The latter immediately answers Gort each time (without even bothering to open half-closed eye). This is probably a normal reaction to a pecking poke, but it is probably hostile as well.

A naive, solitary bird, probably nervous about my presence, does a whole series of Yawns, interspersed with 2 extreme Gorts. Just like last year.

This single bird is eventually joined by its mate. The only display by any of the four birds was a Gort, first slight and then extreme by the previously single bird after its mate had alighted.

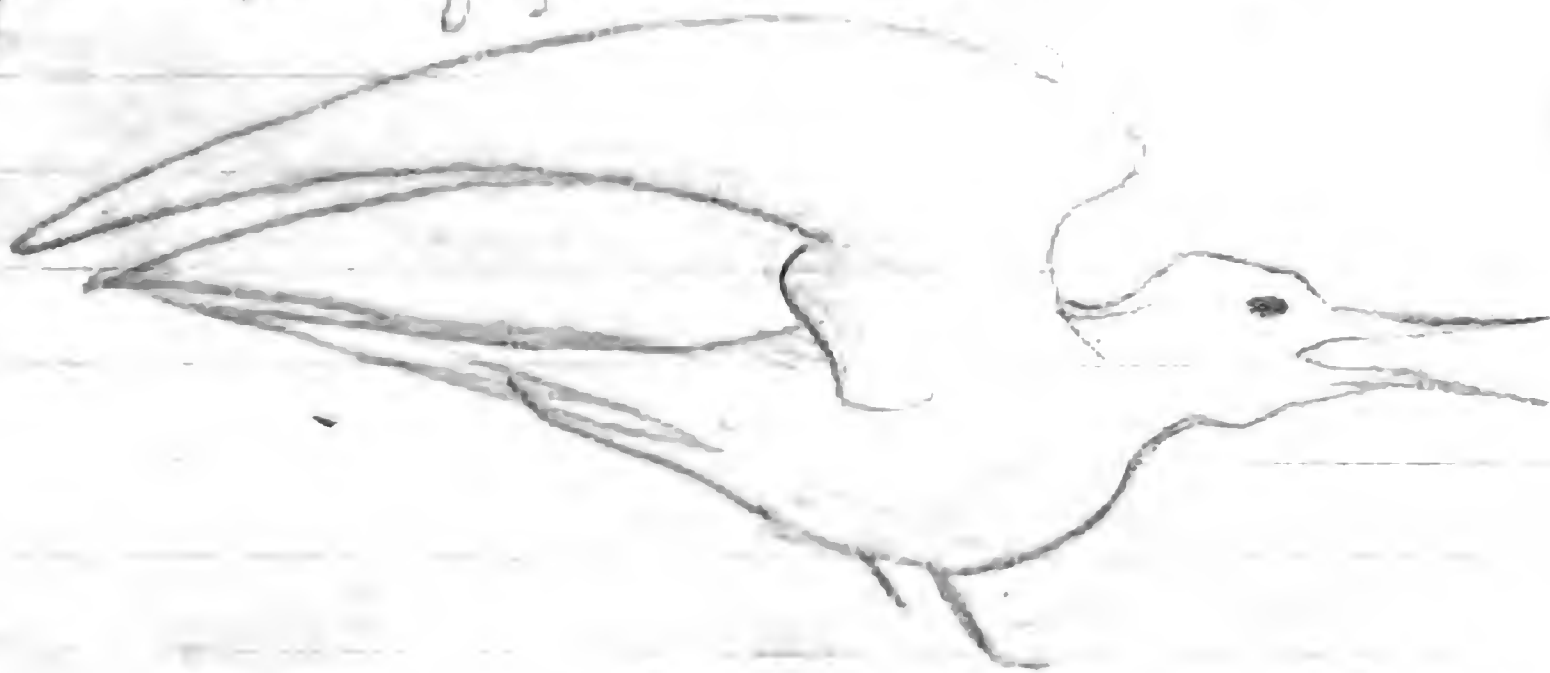
all over, Jan 1.

188



For a while, all birds do a series of extreme facts, but apparently quite silent, then everything goes down.

One bird of one pair flies off briefly. When it comes back it provides short bursts of P.C. by all 3 birds on ground. The birds of the other pair at least, just tilted head a little forward a little, and half-raised wings, down as the P.C.'s.



Then the birds of the other pair and an extreme silent Gost after its P.C.

Aside from one or two tentative jokes by one of the birds of one of these pairs, I have seen no trace of mutual preening this year. A very bad sign, I'm afraid.

January 16, 1957,
H. J. S. L.

One of the birds of the two pairs noted above arrived very early this morning. Just sits on the same station as yesterday. I think that this, and several cases I have seen on previous days, would seem to suggest that the pairs fish separately at night — or at least do so quite frequently.

Then another bird flies in and starts to land beside this bird. Comes in with P.C. and usual landing movements. The bird on ground immediately utters P.C. and goes into that head-slightly-forward

Jan. 16, 1957, II.

(389)

and wings ... the bird on ... aggressive ...

... wing half raised (more ... the ...
... on an adjacent ...
... than its ... moves ...
... greeted by another ... a few ...
... the pressing invitation posture, but ... get any response.

I look up again, however, the first bird is pressing the newcomer. ... mutual preening. ... he ... moves over and starts to preen himself!

One of the birds of pair flies off on little circular flight. When it comes back, the bird on ground just does a post before it lands, and remains in the post until after it lands. The landing bird gives a brief post after alighting. All quite silent.

A little more aerial disputing between the pair and a third bird. ... when an actual fight breaks out in air. ... just an attempt to pick one another while the birds hover face to face. This species certainly doesn't have any ritualized swoop - loop performance. There is probably a tendency to glide during the P.C.'s, but this is by no means invariable.

One interesting thing did occur during this incident, however. One of the birds appeared to utter a short short-bird-like

allies, Jan 16, 1957

(390)

collected in the midst of the dispute! I thought that I heard a
few of these, short to moderate, long, two days ago when the large
flock of these birds flew over me. So I guess that I must add this
to the repertoire of the species.

The head feathers of the bird being pursued by its mate are
raised. More fluffed than ruffled - the head just looks particularly
round and large and ball-like.

The pursuing bird in this species also looks after it except its
pursuing of its partner by frequent Gasts.

There is considerable variation in the quality of the P.C. notes, even
within the same call. Some are more common in tone, some are much
buzzier. It is possible that some of the latter are pretty reminiscent of
the "tic"-like notes I heard last year. I am certainly not sure
about this.

Notice during one of the usual pursuits that the pursuer gives
burst of P.C. just as he swoops (with beating wings) at the pursued.
Good evidence of the aggressive nature of the P.C.

allies

January 17, 1957
Hutchins

One bird flies over head with 2 fish in beak. Flight quite un-
usual. Head gliding, trying to cope with the unusually
strong wind. Another bird flying nearby, but there is no reaction
between the 2 birds. The bird with fish eventually succeeds in land-
ing at usual station. Just sits there, alone, with fish still in
bill. Eventually, as mate doesn't come, just swallows fish and
flies off.

Later on, one bird of pair is sitting alone on station when the other
flies over head to come in and land. The sitting bird just gives P.C.
in ordinary sitting posture (head & bill horizontal). Then, when
the other bird finally lands, there is no M.C. except for a very

allura, Jan. 17, 1957, II

(391)

... then stroke a foot, the head and upper back feathers
... allura ...

... with the ... and again ...

I have now seen the ... for a bird fly by with feet
apart ... sometimes another bird flying
nearby. The first ... bird has not made any attempt to "enter"
the other bird — unless trying to land with the feet, can be considered
an enticement. "He" doesn't even try to fly or glide behind the other
bird very much.

allura

January 18, 1957
Mito, Nii.

A flock of ... birds flying over the island this
morning. Lots of ... but nothing else.

These aerial P.C.'s can vary enormously in length. From about
6-8 syllables to 16-20 (at the very least). This also seems to be
true of the ground P.C.'s, but I am not quite sure that they ever reach
the extreme length of the longest aerial calls.

... bird on ... ground by its mate. Latter made one
unsuccessful attempt at landing first. ... display of the bird
on ground was P.C., with head stretched slightly forward, horizontally,
once with wings half raised, once without.

Another case of a flying bird giving P.C. in semi-V-glide — this
time not coming in for a landing (although, of course, these birds glide
a lot anyhow).

There is no doubt but that the P.C. of this species is much more

albus, Jan 18, 1937, II

392

common than the SCW of the Brown Noddy. Presumably correlated with the rarity of other displays, particularly LCN's or LCW's, in this species.

I think that it is usually the ♀ who takes the initiative in soliciting preening at this stage of the cycle.

albus

January 19, 1937.
Photo Maui.

Have just heard an aerial P.C. (without any trace of V-glide) by a bird coming in to land near another which included at least 30 notes. Some of these were very rapid, about as fast as some Glik of some gulls. I think that this may be relatively common. So the P.C. of this species may also be homologous with both the LC and Glik of gulls. Another resemblance to the SCW of the Brown Noddy.

May 12, 1957
P. H. H.

Lots of birds here like last year. As might be expected, many earlier than last year. Quite a lot with eggs, quite a lot without. No young apparent. Have seen a number of single flights, but nothing I recognize. No courtship or early pairing as yet. In fact — as usual — no courtship or early copulations yet.

New Year's Day Ch. and the Rattle (R.)

The general physical form of Ch. movements and postures is much the same as described last year. Most of the Ch. is certainly silent. But this is not true during most M.C.'s, or, at least, the initial phases of most M.C.'s. When one bird, with or without a partner, goes in to join mate, they usually both Ch. immediately. This is accompanied by a rapid burst (4-10 usually) of sounds, brief syllables in typical high-intensity rhythm (quite as rapid as the Ch. or Cop Calls of most gulls), much faster than usual SCW rhythm. Each syllable is similar to SCW notes in quality, but harsher, & probably less loud than SCW. These notes usually die down quickly and the Ch. continues silently for a while.

The Ch. call can be given with bill open. Some Ch. seems to be accompanied by real C, i.e. bill wide open at other times besides the violent lateral head-shakes. The same Ch. call can also be given with bill absolutely closed!

Some Ch. is almost like "Upward Ch." of Kittiwake. Head & bill horizontal or at least not pointed directly downward. This seems to be particularly common when the 2 birds are "billing", i.e. bills touching and, if open, interlocking.

Must emphasize the frequency of "trembling" movements during the Ch. of this species. And the at least usual absence of the up and down head movements characteristic of the Ch. of gulls.

I have seen birds briefly give Ch. Call in a sort of V posture with bill closed.

Stelides, Jan. 12, 1757

5294

||| I would be surprised if the Ch. Cell and SW sometimes
intergrade when there is both hostility between pair and neighbor(s)

The R is even more difficult. Have heard it several times today, quite clearly. Long note, sometimes repeated. About length of LCWN, but obviously quite distinct. Like a person saying R's rrrrrrrr — much less harsh and mechanical sounding than Rattle of Swallow-tailed Gull. Have seen it given once by one bird of pair, alone, in O posture (quite high, almost St.), bill only slightly open. Followed by Ch. Then again by V (rather egg.) bill closed, after LCWN's (rather snuffed) in O, where a third bird came too close. Then again heard it at distance associated with Ch calls, when I couldn't discover which birds were giving it.

I wonder if this is the "murmur" which other people have
 dreamed?

I also wonder if it is homologous or analogous with the M of gulls.

Nervous" or seems to be a very common reaction to my app-
earance Quite obviously not coincidence

The R after muffled LEARN's decended alone. was given just after the intruding bird had turned to fly away. And it was followed by relaxation. This would at least suggest that the R is one of the lower intensity less aggressive vocal performances.

♂ flying along an isolated rock which appears to be a com-
munal area, trying to rape 7 other birds in row. Repelled each
time with what appears to be SCW (definitely SCW in the few cases
I could hear).

Then a bird, probably same ♂, tries to rape ♀ of pair on territory standing beside her mate! Both birds of pair attack (probably silent).

(395)

January 13, 1736,
North River.

The head usually goes up & down during Ch, in a quite regular rhythm, but this is apparently always much slower than the call rhythm or the Ch movements of gulls. The trembling continues throughout the up-and-down movement. It is the up-and-down movement which usually develops into the n.b., if there is any.

[illegible]

96

☒ Hostility apparently provoked by neighbors subjected toward mate. Can
Turtles Vch. Vch. Sch. Sch. Vch. Vch. Vch. Vch. Vch. Vch. Vch. Vch.
26 Sch. Vch. Sch. Vch. Sch. Vch. Sch. Vch. Sch. Vch. Vch. Vch. Vch.

~~* G - HFR - Galt + G - V. SCW. LOWN - LOWN. LOWN. SCW. LOWN.~~
~~LOWN. LOWN - LOWN. LOWN - LOWN - Galt. V. Galt + G - V.~~
~~G - HFR - Galt + G - V. V.~~

Some Ch. is certainly accompanied by G just like that of Haddley,
bent tongue and all.

☐ sch sch. sch vch vch vch sch. sch. sch sch

Watched a bird give first silent SCW (which is probably not com-
pletely silent) then audible SCW. Both from usual Δ position.
Song not visible during silent part, then aerial course ex-
ceeding audible part (looked like some of the SCW I
saw last year).

All the FB I have seen close up does appear to be quite
silent

Saturday, Jan 13, 1957, III

(297)

cloudy

be...

No protection after 3:00

Regulate distance

11 minutes quite

It is at

most unusual how that the

of this species have nothing

any of other terns or gulls or even the

any of the species

One case of this FB preceded by nothing at all (just the "or" returning to the ledge). Two

cases followed by nothing at all. One case followed by a pre-

ing ♀

This FB & response in a white seemed to provoke a lot

of hostility by night or just as in other species

fewer FB's & response in a white seemed to provoke a lot

of hostility by night or just as in other species

fewer FB's & response in a white seemed to provoke a lot

of hostility by night or just as in other species

fewer FB's & response in a white seemed to provoke a lot

of hostility by night or just as in other species

fewer FB's & response in a white seemed to provoke a lot

of hostility by night or just as in other species

fewer FB's & response in a white seemed to provoke a lot

of hostility by night or just as in other species

fewer FB's & response in a white seemed to provoke a lot

of hostility by night or just as in other species

fewer FB's & response in a white seemed to provoke a lot

of hostility by night or just as in other species

fewer FB's & response in a white seemed to provoke a lot

of hostility by night or just as in other species

fewer FB's & response in a white seemed to provoke a lot

of hostility by night or just as in other species

Stable

Jan 10 1756

~~HN - gold - south S.W. L.A. - L.A. - south S.W. L.A.~~
~~U.G. - gold - U.G. - gold - U.G. - gold - U.G. - gold~~
~~HN - gold - HN - gold - HN - gold - HN - gold~~ 13?

FB and mutual preening $\chi^2 = 1.0$, $df = 1$, $p = 0.32$

The Lsh during Ch and the HFx during Indling HT are actually the same movement, or, at least, very close to it.

~~Vch~~ ~~Sch~~ ~~Sch~~ ~~Sch~~ ~~H+G~~ - ~~HFR~~ - ~~HFR~~ ~~Vch~~ ~~Sch~~ ~~Sch~~ ~~HFR~~ - ~~Gest.~~

M.C. ~~Sch~~ ~~Sch~~ ~~Sch~~ ~~Vch~~ - ~~Sch~~ - ~~Sch~~ ~~Sch~~ - ~~Gest.~~ Sch. Sch.

The Choking of this species certainly seems to be related to autochthonous as to in fact the same way as the Ch. of many gulls. E.g. one bird stays in nest and scrapes a Choke, while other collects in m. Then the latter comes back, drops m. in, and they both choke together, etc. etc.

This makes it difficult to analyze the u. l. movements of ten combined with ch. Most of them may still be an orthotomus rather than part of the display pattern.

☐ ~~Gast-G-HRK-gast-HRK-HRK-gast-V-gast-V-gast-V-gast~~
~~V-gast-gast-Sch-gast-HRK-gast-HRK-gast-HRK-gast~~

I have seen quite a bit of "murder" for in both intra-specific hostile and M-C situations. So frequent as to seem a good deal more than coincidental. Quite violent and hurried,

Stokes, Jan 14, 1902, II

(579)

When ♂ again, the ♂ is preening the ♀ incessantly for
a while, apparently without intermissions, the ♂
jumping off again. Just stands there for a long time again. ♀
just turns in H, occasionally looks up at him. His bill is pre-
ceded down, and he makes occasional little downward movements,
quite soft and gentle, as in mutual preening. Then I notice that
his bill is moderately open, not opening & closing as in Cawing, no
longer raising, as in - Can't see any more. It stays this way
until actual cop occurs. Then the bill closes, he raises and
starts to cop. He is in contact, etc. Contact apparently
occurs. Then ♂ doesn't slip off ♀, just folds his wings,
opens bill, and stands quietly again. Eventually 2 more apparently
successful contacts made - just as before - with the same quiescent
period between them. Then ♂ slips off. No post-cop display.
Then ♂ goes & disposes in the next cup.

The incident would seem to prove that the social or mutual
grooming is very strongly sexual.

The ♂ of the pair that copulated earlier then moving piece off to collect more seeds. And the ♀ birds behave as usual. Then ♂ stands, giving first silent SCW, then audible SCW, then flies off again. Is this a further sign of the latent hostility between the members of the pair? Or an indication that SCW can be a general frustration reaction? Probably the former.

Atlix, Aug. Jan 14

400

Another cop. attempt. Definitely a different pair than last time. (I shall call these 2 pairs A and B)

When I first notice the birds, ♂ B is perched on the ♀, facing her face, preening her chin, crown, & nape. Then he gradually moves back until he is standing side by side with the ♀, facing in the same direction she is, but standing a little behind her. Still continuing to preen the same areas, however, including her chin. Then he goes on her back. Like ♂ A he just stood for a long time. The ♀ just stood in H, didn't raise her tail or spread her wings. After a while the ♂ began to open his mouth briefly, and I could see that this was a perfectly good G. He seemed to be silent, apparently, posture of head & neck rather like the "egg" and "gust" (rather short-necked). Then he also began to make brief bursts of more strictly copulatory movements, waving wings, & raising tail. (I think that his mouth was always closed during these bursts). The ♀ still didn't cooperate. Then a third bird flew up, and the ♂ screamed LOUIN's at it. Third bird flew off. ♂ B, still on ♀'s back, attempted to continue cop., but she began SCH with G & many Ish's, finally throwing him off. Then both do mutual SCH with very pronounced G and many Ish's. Then both relax. Both begin to preen normally. ♂ finally flies off on collecting trip.

It would seem that all the sexual behavior of this species (regurge and cop., and to a lesser extent, FB) is very slow in "coming to a head". Looks as if it had a very high threshold. This may also explain why it is so relatively rare.

I have again seen a ♂ attempt rape after rape (with 3 different birds in a row — so perhaps the lack of "normal" sexual behavior is due to the lack of ♀ cooperation).

Have just seen a successful FB and regurge attempt at A without any display at all, except for M by ♂. I might add that it was definitely the ♂ who regurged — the ♀ has distinctive white marks about her bill and chin. This is the first case in which I am sure of the sex of the birds involved.

stolidus, Jan 14, 1957

402

Incidentally, I should mention that none of the "singing" counts are real alarm postures.

There still seems to seem to be any landing bill. I think that bird, flying in to you then, after start the Ch call, actually turning down.

Rather good view and hearing of R. Bird sitting on nest, facing in toward cliff, then facing away from another bird that comes in and lands on cliff some distance below and to one side of the sitting bird. The sitting bird then looks back and looks around to look at intruder again, then 3 LCWN in row. Then it looks back and looks around to look at intruder again. Then it makes the posture (which might be called a "twisted neck" but which appears to be unritualized) with rear & tail visibly vibrating in a "r-r-r-r-r" rhythm (very very fast), then it makes another LCWN in row. Bill closed or almost closed during it.

Now I am beginning to wonder if this isn't the equivalent of Gile (like a similar but louder sound given by *Manatarias*, *S. lunata*, or *Butor*, Flight or Erect Flight).

Interesting incident. One bird of pair, possibly ♀, flies in with Ch call to join mate on ledge. The other SCh. Then the presumed "♂", begins to mangle a lot of billing in his Ch, and this billing gradually turns into obvious FB. The "♀" goes down into M, starts to regurgitate, then swallows food back again. The "♂" goes on FB for a few seconds, then his pecks gradually turn into mutual preening. Both birds relax. Then "♂" begins silent SCW's, does V+C, more silent SCW's, flies off.

Thus the billing during Ch, the FB, and the mutual preening pecks would all seem to be closely related.

I have also seen isolated Isb's in apparently mixed hostile & sexual situations (e.g. after a pair has Choked together) given from unritualized standing or sitting postures. They have been coincidental.

Stated Jan 14. 1887 VI

403

the 1st who FB is and the 7 who

of Oh, a behavior which seemed to be another form of intense regurgitation and Oh, so that the 2 patterns are associated in spite of the fact that they are quite distinct in many ways.

[Faint handwritten notes at the bottom of the page]

~~LAWN - LEAN~~ ~~Goddess~~ ✓ ✓ ✓ ✓ ✓
~~LAWN - LEAN - LEANT~~ ✓ ✓ ✓ ✓ ✓

One bird of pair pursuing the other. I think the ♂ pursuing the ♀.
(He looks larger). The ♀ twice responds by stretching her head & neck
forward in a very noticeable imitation of the M posture.

My counts lasted about 4 hrs 30 min today! (me)

stolidus

January 15, 1957,
Hate River.

Gard, LAWN-LAWN-LAWN-LAWN-LAWN. LAWN-LAWN-LAWN-LAWN-LAWN-LAWN-Veh.-Fish. Gard + G. LAWN-LAWN-LAWN-LAWN-LAWN.
LAWN-LAWN-LAWN-LAWN. H. LAWN-LAWN-LAWN-LAWN-LAWN.

~~Vch - Sch - Sch - Sch - Gort~~ ~~Vch - Sch - Sch - Sch - Sch - Gort~~

~~galt + C - u - HK - galt - u - galt - u - galt - galt + C - HK - galt - u -~~
~~galt - u - galt - u - galt - u - galt - u - galt - u - galt - u -~~
~~HK + C - galt - u - galt - u - galt - u - galt - u -~~

Another cop attempt. I saw a male and a female. The male looked up to see if jumping on the female. They were along nothing unusual. Once female was in a position. Then presents the male along for a long time. her bill in what looks like more for. Then another male and both male and female scream LWN's. Other bird flies off. continue cop, but female gives P. in O (bill closed), slides off. Post-cop display of mutual N, beginning with G - V sort of thing, quickly turning to weak Gort - V. Then relax. Stand side by side.

Another bird Sch - sing with tail up with tail way above wing tips. Also keeps tail up in air. Turn back of Ch.

Another cop attempt at same pair as above (Sch + C) interrupted by arrival of 3rd bird. This time the C's do not (C's probably Sch) after male slips off.

* LWN - LWN - LWN. Gort G. V to P. LWN - LWN. SCH - SCH. Jan. P. LWN - P. V to P. before attack LWN - Gort LWN - Gort - V

Another case of male and female, who both go to nest with egg and into down there.

Pair C don't do much after their second cop attempt this morning. Just sit. Male preens himself a lot. And then, several times, they do Sch together - when there was no one near or approaching them. The stimuli must have been provided within the pair.

Mutual preening is often interspersed with Gorts which may be significant.

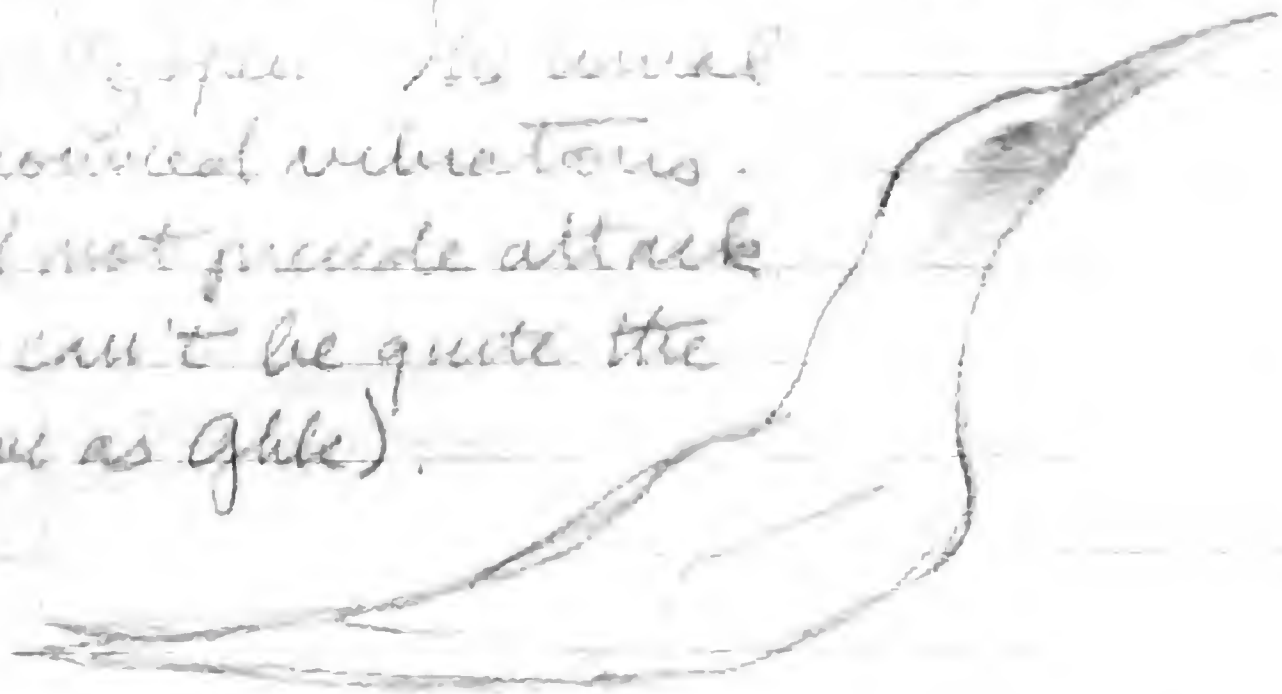
Some of the Ch and N between mates seems to intergrade. When the up-and-down movements of the Ch become particularly extreme, and the LWN's become particularly reminiscent of the HTN's still, this is relatively very rare.

Shaded, Jan 15, 1957, II

405

Another cop attempt at the open mixed nucleus, but the cop still was in the same position. After a moment, the cop flew to the open mixed contact of close. This may have been the faintest of the 4 or 5 cop displays.

Have seen a cop in A and B poses with a strong bill. Extreme head - O - sent - U. Bill just pronounced vibrations. Did not precede attack (so can't be quite the same as gble).



This is still just one of the conventional O postures, I suppose, but one of the more elongate types.

Have been watching a communal area this afternoon, and have seen one most suggestive incident.

One bird in area (♂? - call him X) much more aggressive than any of the other birds around. Walks back and forth in area, threatening all its neighbors. Usually N; Gasts & G all treated with HTK's, and also a lot of walking around in L posture & G (I had forgotten how important this could be). Occasionally LWN's, at least one S & W and one R (in L). Most of the other birds ignore X, some briefly N back. Every once in a while, with or without threat preliminaries, X flies to attack a neighbor. The latter usually flies away and a pursuit flight develops. Usually silent, although X once went off screaming. The actual movements of these flights have been quite ritualized so far, just very fast, twisting and turning. It has been quite noticeable, however, that X constantly tries to get in front of the bird he was originally pursuing. Sometimes the latter follows him for a while, and the lead may change 4-5-6 times in rapid succession. Sometimes the original pursued

Stokholm, Jan 13, 1954, III

(106)

just pulls off and leaves ribbon X gets in front. In some cases the pursuit ribbon breaks up, some or other, and X is left alone in the communal area as before.

I have seen X involved in at least 3 such pursuit sequences of at least 2 different birds.

I wonder if this is connected with pair-formation? And High Flight? I think so — but it is going to be difficult to establish.

Another interesting but enigmatic incident. An apparent pair displaying together in communal area. Essentially $N \rightarrow Ch$ but much elaborate than anything I have seen in the colony this year. The N was long and extreme. It included a posture, sort of S to which must, I think, be a sign of high intensity. The high intensity N. Lots of parading around in L (or M) after the N. Partly circular parading. All very reminiscent of the L posture, undoubtedly homologous with the M and L postures of gulls (identical in fact) was also very reminiscent of the "Bewildering" of terns — thus probably giving homology. The transition from N and Ch was smooth, and occurred repeatedly, back and forth. I noticed that the tail was raised above wings quite a bit. In Ch, in L, in V+G of N, among other postures. Much of the circular parading in L was accompanied by a "tail up" which was with bill closed.

The ♂ (?) once rushed away from the "♀" and N of at a neighbor. One of the few examples of this type of distraction that I have seen.

After a long period of this, the "♀" flew up, the ♂ followed, and they had a little circular flight — apparently quite silent. Landed in different spots in communal area, relaxed, started to preen. Then one flew off and disappeared.

So this may have been early pairing!

A ♂ who has just displayed with a ♀, in the usual way (N and M) then picks up clam shell or feather, plays with them a while, and then flies off to the cliff with a feather. (He had fed the ♀ before.)

stolidus, Jan 13, 1957, V

(407)

comin
area

V. HFK
G. V. HFK

comin
area

comin
area

A bird apparently doing SCW, after pursuing its mate, when
the mate begins to choke!!!

comin
area

comin
area

stolidus

January 16, 1957,
Hoto. Nur

Watching another part of the colony this morning.

M.C.

M.C.

M.C.

M.C.

M.C.

M.C.

~~U+G-gst U+G HFR-U+G HFR-gst~~
~~LCWN-LCWN-U+G-HFR-Sch LCWN LCWN-Vch Sch~~

Penal... Apparently don't have...
 burst of... burst of R, very harsh and
 extremely... of the R's I have heard before, but
 this may have been due to the fact that the birds are much closer than
 any I have observed so far). Could also be translated as "Tuka-
 tuka tuka tuka tuka..." I am not sure which part of the
 gave this (I was so startled), so I can't tell if the... given
 from a ch. int. mov. gesture or a work O. In any case, it was imme-
 diately followed by a burst of Sch by me or both birds.

I have noticed that whenever one... of the
 other, the... and often interrupts the... by...
 gasts. Some of these gasts may be int. movs. of... but
 others are probably a reflection of the relatively low intensity hostility
 remaining between the members of the pair. And others may be
 invitations to reciprocal preening & although I can't say that I
 have ever seen such "invitations" accepted.

~~LCWN-LCWN-Vch-Sch LCWN-Sch LCWN-U+G Sch gst-HFR-U~~

Can say a little more about the bill-opening in Choking. The
 bill is often flung open, and sometimes kept open, even without
 pronounced Sch's. But most of the bill-opening in Ch seems to
 be without the tongue-raising of G (and is, presumably, less
 strongly hostile than G).

~~U+G-U+G-U+G-U+G-gst+G U+G-gst+G U+G-U+G HFR-gst~~
~~gst gst LCWN-LCWN before attack gst gst-gst V-LCWN~~

~~Vch-HFR-gst V-gst V-gst-V gst-V-gst-V-gst V-HFR-
 gst LCWN-Vch-Sch HFR-gst+G-U+G-gst-V-gst-V-gst-
 V-Sch Sch Sch Sch Sch Sch Sch-gst-gst-Sch HFR-gst-gst~~

stolichus, Jan 16, 1974, I

(910)

to the cliffs.

What may have been the same σ was back almost immediately to perform a similar high intensity N performance with an ω σ . This was ended by the ω uttering a scream (either sound or smell) and was so fast that I didn't see it and Gungung at him. He ω σ and didn't move back.

These incidents would seem to be typical of early pairing. I have certainly seen both the σ and the ω of a presumed pair after a long bout of mutual N, walk up to other birds and N briefly (they did this separately, while their presumed partners were away). There was never any response to these "secondary" approaches except for escape by the approached bird after a longer or shorter interval. Still, the birds that did the approaching didn't really look as if they wanted to attack.

Circular flights seem to be an alternative part of these performances. Some of them appear to be purely hostile, others may be attempts by the σ to lead the ω to the cliffs.

The relatively few displays in immediate association with overt attack and escape in my counts of patterns in the communal area is a reflection of the few attacks in this area.

Much the same can be said about disputes in the colony at this stage. Most of the attacks that do occur there are after aerial chases (with LOWN's in many cases).

Comm area
SCN. SCN - HFK. Loh. Gpt. Gpt. LOWN - HFK - Gpt. Gpt. Gpt. after escape
Gpt. Gpt. Gpt. - HFK - Gpt. Gpt. Gpt. HFK. Gpt. U. Gpt. U. LOWN U.
U. U. U. U. Gpt. U. Gpt. U. Gpt. Loh. Loh. L. before attack - U. after
attack - SCN - Gpt. Gpt. - HFK. L. Gpt. Gpt. HFK - L. Gpt. 230

I have seen more and more rape attempts in this communal area. They seem to be a characteristic feature of the sex life of this species.

A presumed σ in communal area walks up to and around 2 different birds in L, as in circular parading, with one or two faint N movements when he gets close. Gets no response except brief N by the

strobilus, Jan 16, 1957, V

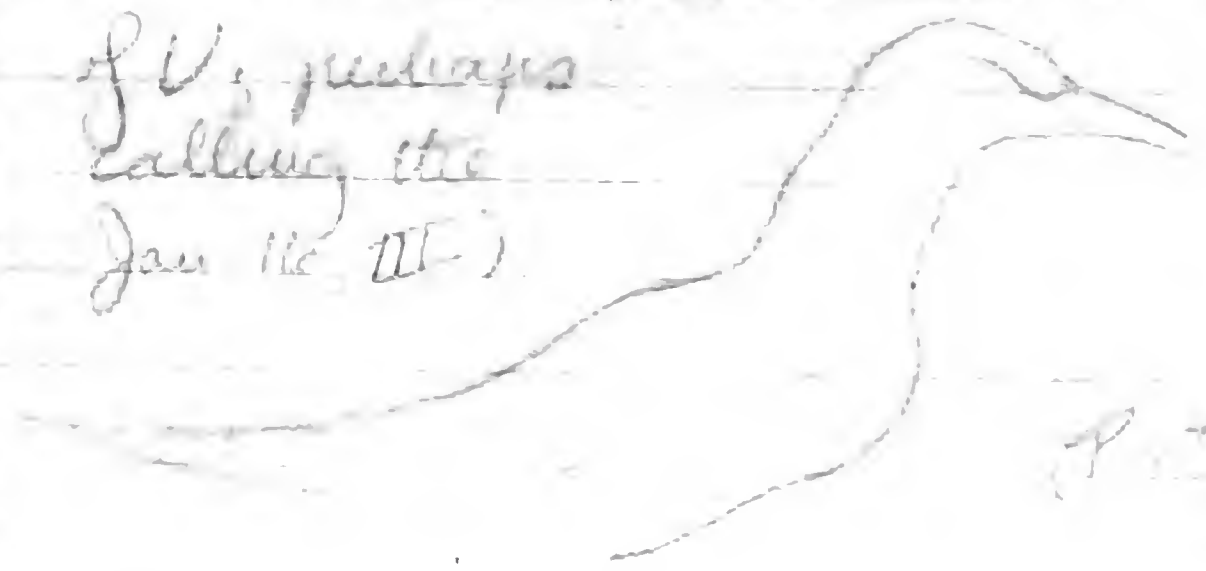
(411)

new bird - ... - then flew up to ... level in the ...

~~Got before escape - got - got - SCW - SCW - H.K. - Got - Got - V.G. - SCW~~
~~before attack - SCW after attack - SCW before attack - SCW after attack -~~
~~Bird in SCW attacked - Bird in SCW attacked - H.K. - SCW - Got - 350~~

The L posture seems to be a very common prelude, almost an int. ... of the pairs in this area

The V before attack included in the count ... above were almost L's. This ... the most aggressive form ... what I have been ... "extreme Agg V" (see drawing on ...)



Very good proportion

These birds do not seem to display toward birds flying far above them. They do, however, display toward nearer flying birds. A lot of these displays seem to be the same as the ones that would be used during ground disputes. But there is certainly a tendency for birds on the ground to utter brief SCW's whenever another bird flies just over head. (Actually, of course, all or many of these "brief SCW's" could be the first syllable of SCW).

~~Got - before escape - got - got - SCW - SCW - H.K. - Got - Got - V.G. - SCW~~
~~before attack - SCW after attack - SCW before attack - SCW after attack -~~
~~Bird in SCW attacked - Bird in SCW attacked - H.K. - SCW - Got - 350~~

SCW is the usual (or only) display used by birds to repel rope attempts. I have seen this again & again

Stalidun, Jan 17, 1957

[Faint handwritten notes, possibly "The first of the first"]

[Faint handwritten notes, possibly "To prepare..."]

[Faint handwritten notes, possibly "V.I. got. V. L. got. L. got..."]

Just saw a High Flight which began unusual - a bird circling higher and higher in faint strongly beating jerky flight. Then the pursuer managed to get in front of the pursued - and immediately began to glide. Glided in circle and then went down a small. The other bird did not respond. Just ahead a small, into normal flying, and down a brown.

Before I forget, this species may have a sort of "aerial Rattle" A series of rather explosive sounds "Tuk tuk tuk tuk....", each syllable being much further apart than the "r"s of the usual R on the ground. I have heard this several times without being able to trace it, but at least once it appeared to be associated with an ordinary, unusual, used pursuit flight (by the pursuer -) This is all very tentative, however, and I may be mistaken.

[Faint handwritten notes, possibly "HPK-LWN-LWN. got. got. got + G. HPK-L before attack - SW after attack..."]

Stalder, Jan. 18, 1957, V

(419)

[Faint handwritten notes, possibly describing bird behavior or observations.]

Physiology of course. Same as previously noted app 2 hrs
The other listed should also be seen.

Stalder

January 17, 1957,
Monte Rio

[Handwritten notes with checkmarks, possibly a checklist or list of observations.]

[Handwritten notes with checkmarks, possibly a checklist or list of observations.]

Notice that the Gorts of 2 opponents or partners are often synchronized,
quite well, and defining.

A case of mixed reacting by Sch to pressing by its mate.

[Handwritten notes with checkmarks, possibly a checklist or list of observations.]

[illegible]

This long fight recorded in the count above was the big fight I have seen. (It is recorded in a rather disjointed, but all correct fashion). Involving a bunch of 2 pairs, who fought furiously while their partners looked on in an almost closed fashion. These pairs were about 200 yds. of long standing. (I have seen 2 pairs in the same spot and were I began to shoot a week ago I didn't see what started the fight).

Two main points of interest:

The "Hinge" pattern was very conspicuous in the different forms of most of the species of Gulls. No Squat. Just in normal standing posture (neck rather withdrawn - but nothing at all reminiscent of the H), face to face, fixating one another intensely. Lasted for minutes on end. Only broken by very rapid, slight, "constrained", HFK and Gasts, performed absolutely simultaneously by the 2 birds.

The 2 buds also had a tendency to resemble the other displays, Choking & LWN's for instance, but this was nothing like so perfect.

One of the attacks was delivered from an "unintended pre-attack" posture. Comme ça. I have also seen this in the communal area. Sometimes it is rather more like a V, but it is extremely difficult to class as a display. It is one of the reasons I am going to have more displays after attack than before attack in my counts.

I have also seen
area sometimes it is
but it is extremely

HFK. HFK. R. SCW-LCWN-LCWN SCW-LCWN LCWN-LCWN-LCWN. Galt & G.
614

A sudden, sharp "Tuk tuk-tuk" provokes a panic in the colony.

stolidus, Jan. 19, 1957, III.

(421)

Lunata seen & heard before. It sounded almost like the Flammaria. But I don't hear it quite like the sound, and there were no Flammaria in the area. Maybe a sort of Alouatta.

Flammaria was heard at about 1300.

I have seen one Flammaria in the air. It was just descending in a pouncing. This may have been another one of the Flammaria effect comparable to some of the Flammaria in the air of Flammaria full!

Lunata

January 20, 1957,
East Island

There were quite a lot of these birds around on Motu Sti and Motu Mui. Quite active in the air, but not very interesting. P. R. says that they have already bred, around September.

The aerial patterns fall into 3 groups.

1. The usual aerial call, given almost constantly by flying birds. Seems to function as an LCN. Obviously homologous with one or more of Mukie's "K" calls.

The usual version was slightly three-syllabled. Might be transcribed as "Kwawahup", using the last syllable.

There were also one and two-syllabled versions. "Kwak" "Kwa-hup".

Possibly also a four-syllable type.

All three were given from normal unmutualized flight.

2. A loud pinging "Kneeeeee" or "Kneeeeee", essentially monosyllabic, with possibly just a trace of a bisyllabic division at times. Obviously homologous with

Location, Jan 1st, 1953

the "Tee-ee-ee" of the Common and also (I think) the much shriller and more piercing. Relatively rare. Given in normal flight, by birds suddenly coming over me (presumably surprised and rather alarmed).

3. A loud Rattle (much louder & harsher than that of the Brown Noddy). Also relatively rare. Usually given by one of two birds flying together. Given by the bird flying in a fast very bouncy flight with remarkable deep wing-beats. (Like a Puffin flight but the wing-beats much faster and the whole flight much faster) This is obviously related to some of the fast, usually pursuit, flights of gulls.

The only patterns I observed performed by birds on the ground were weak V's and weak J's.

Friday,
Feb. 17, 1977

Some of the birds were seen to be around the house, but not about the lake. Some were seen in the lake but not in the water.

These sexual behaviors of the birds could be hope for. Have seen two copulations quite early in the morning already.

Both provoked by brief preening of the ♀ by the ♂. The copulation itself seems to be the same as that of other birds. Perhaps most reminiscent of the Brown Noddy.

The male seems to be slow in getting started. Just stands for a while after mounting.

There may be bursts of P.C. by one or both birds during and after the mounting. Some of these are probably provoked by neighbors but others seem to be provoked by the behavior of the mate itself.

As usual, the male's attempts to bring cloaca in contact with ♀ come in spurts, accompanied by wing waving, etc.

These spurts are accompanied by a definite Cop. Call! Like P.C., but "muffled", softer, more rapid, and given with bill closed. Usually uttered by ♂, but possibly also uttered by ♀ - at times. Obviously very closely related to P.C. May also utter grunts or alternate with P.C.

The ♀ usually just stands silently during this performance, raising tail as usual. Sometimes gives burst of P.C. and/or turns head around to "poke" at ♂.

The ♂ often pecks down at ♀'s head during the intervals when his actual cop. attempts have ceased or are very weak. This seems to be a preening attempt. The ♀ responds by half-closing or closing eye(s) as in the usual sexual preening. One of the ♀'s this morning, in fact, went through

albus, Mar. 11, 1951

424

almost the whole cop. with her eyes closed, (the "paled" at her, off and on, throughout the copulation).

The post-cop reactions seem to be nothing more than Gerts (as usual apparently virtualized in physical form) by both birds.

These, in turn, may be followed by more mutual preening.

It is my impression that copulations are relatively rather rare in this species. Again reminiscent of the Brown Noddy.

The P.C. is by far the most common hostile display here. One hears P.C.'s constantly all over the place. Call itself just as in the Easter Island birds, but I have been even more strongly impressed with its resemblance to the L.C. of gulls. Often like this:

Very harsh and rasping at first. Sometimes getting "plover" in tone toward the end.

Very common during little aerial "hovering" disputes.

Very common, by landing and perched birds, whenever one bird comes in to land near others.

It may - possibly - occur during M.C.'s, as the initial reaction by one or both birds.

I can certainly confirm the fact that it is very seldom given from a ritualized posture. But it certainly is usually accompanied by raised and spread wings when given by birds on ground or perched in trees. Just as in Easter Island. The wings are usually beaten also. This is obviously a flying or flying intention movement, and does not appear to be ritualized in physical form. The head & neck may be stretched forward or raised slightly, but this is very variable and is more completely virtualized.

albus, Mar. 17, 1957, III.

(425)

Both M.C.'s are very rare. Aside from the P.C.'s (which are certainly very rare and really quite soulful), I have only seen two birds fly over or within birds, and/or an occasional stationary position of the head & neck in what appears to be a preening or tension movement.

Two I saw on a log, usually low down. They respond to my approach by a different call, which I shall term B (for Buzzing). It is related to P.C. but quite distinct morphologically. Single notes or bursts (but not arranged in a definite call like so many P.C.'s) soft, very low, with a twang — lacking the screeching quality of the P.C.'s. When given by the birds perched on the log, they are sometimes (usually, I think) accompanied by the same wing movements as the P.C.'s.

These birds on log fly up occasionally to hover in front of my face in the well-known Fairy Tern fashion. They also give lots of B, single notes & bursts both, during this hovering. This performance seems to "attract" neighbors, who also come to hover in front of my face and give B's.

Whenever one of the hovering birds gets too close to another, one or both birds switch over to P.C. instead of B.

I would definitely say that the B is less aggressive than the P.C. Sometimes, when the B seems to lead into a P.C., it gives the impression of being lower intensity than the P.C., but I am very dubious about this.

I think that these B notes are what I called "Till" notes last year at Easter Island. They are sometimes particularly sharp when a hovering bird comes particularly close to me (in a sort of admiration of a swoop).

I haven't heard a single trace of B during intra-specific hostile encounters.

There are at least a couple of hundred pairs here in one small area (several hundred square yards) forming a sur-

primarily dense little colony.

I have now seen & heard a lot more examples of the bird hovering over me. I am now sure that it is the "flick" I heard in Easter Island. It probably contains quite a strong aggressive component (as the birds come close to me) as well as a strong escape component.

P.C.'s are often given by the more aggressive bird during aerial disputes, which confirms the relatively aggressive nature of this pattern.

The B is either an alarm call or a predator-reaction like the shrill LCN's of gulls. Possibly both.

Just watched an M.C. One bird did PC - Gort & Muffled P.C. (which I shall call MPC), and the other did PC - MPC.

This MPC is like a soft PC, but delivered with bill closed. Doesn't have the twangy buzz of the B, nor the speed of the Cop Call. Not accompanied by wing-raising. Obviously just the low-intensity version of the ordinary PC.

This one pair is quite active. One bird always flying off and returning. Lots of PC's and MPC's & M.C.

albus, I

Midway,
March 18, 1957

Working in the "colony" this morning.

My first glimpse of what might be called a semi-prolonged territorial dispute. A single bird landing on log between 2 pairs, provoking both the latter to long display.

This displaying took the usual form of PC's (& MPC's) and Gorts, sometimes combined. Both the PC's and the

allure, Mar 18, 1957, II.

(427)

were sometimes directed at the intruder and sometimes re-
directed on the mate.

I noticed definite feather ruffling during all these P.C.'s, and it is probably present during all light intensity P.C.'s in all circumstances. (The usual reason, which here, and so the ruffling is usually in the head feathers, and, to a somewhat lesser extent, body (back & flank) feathers. Gives head a rather distinctive shape.



sort of a semi-crested effect.

I have been watching for ritualized aerial behavior but without much success.

There's a lot of aerial behavior going on, but it is very difficult to follow and variable in form.

Lots of aerial chases, usually involving 2 or 3 birds, sometimes as many as 7 or 8. Birds ~~ad~~clung or flying back & forth, with all sorts of evasive movements, curves, side-slips, little plunges, descending glides, sudden rises, etc.

Usually silent, but often with P.C.'s. I have seen one bird chase two different birds in succession, and then become the pursued in a third chase — all within a minute, and such changes are probably common.

Some of these chases lead to actual hovering fights, sort of a variable swoop-rise-and-lower, but this is relatively even rarer.

Some of the pursuits, involving 2 or 3 birds, can go very high. Become more spectacular, as the descending glides are often very long & shifting. Sometimes rather reminiscent of a real High Flight, but always variable and apparently quite unritualized. Might easily be the sort of thing from which the real High Flight of other species has been de-

albus, Mar. 18, 1957

(428)

reloped

One of my troubles is that I haven't been able to
what, if anything, usually precedes these pursuits

When the pursuits are over, the birds simply casual or
separate or fly away. I know that a lot of these pursuits have
involved water, and such mates just settle down side by side,
and perhaps do a little mutual preening. When strangers are
involved the birds just land separately and usually relax
immediately.

Another copulation during which the ♂ preened the ♀.
Post-cop flight by ♀, nothing by ♂.

albus, I.

Wednesday,
Mar. 19, 1957.

Another copulation preceded by the ♂ preening the ♀.
The form of the cop. itself was the same as before. Again followed
by rather weak flights by both birds (first by the ♀ — which is
usual I think).



posture assumed by
intruder.

This seems to be the usual P.C.
birds advancing to repel an

It is fairly obvious now that copulations are also relat-
ively rare in this species. I only see 2 or 3 a day, and always in
the early morning. Just like the Brown Noddy.

I have again seen a few traces of the V-glide with
aerial P.C.'s, even when the performing bird is not landing.
Never very extreme, but I think that it is at least a little
ritualized.

albus, Mar 19, 1957, II

(429)

I must say that the voices of this species and the Black Noddy are not nearly as different as my previous assumptions may have implied. They are, in fact, quite similar — both having a characteristic hoarse quality. The resemblance between the two is particularly marked in their "L.C."s, i.e. some of the P.C.'s of the former sound very much like the SCW-LCWN performances of the Black Noddy.

stolidus, I

Friday,
March 20, 1957

Much to my surprise, I seem to have found pair formation, or at least early pairing behavior, in this species at last. Over on Eastern Island.

My attention was first drawn to it by seeing little flocks of Brown Noddies flying back & forth. Usually in 2's or 3's. A few groups of 4. Occasionally two groups would merge for a brief period, but they usually separated very soon. Just flying back & forth. In mild pursuit. The lead occasionally changing. Usually a very loose formation. Occasional bursts of SCW (see below for further comment) or LCWN's, in usual posture. One or two very brief fights.

One group I watched particularly involved 3 birds, almost certainly a ♂ (A) and 2 ♀'s (A and B). Stuck together or came together again & again over a period of almost two hours (as long as I had time to watch).

These birds, or at least ♂ A and ♀ A, would land from time to time and display together.

This display, in the case of the A's, took the following forms. It might begin with mutual N₂ with or without circular parading. High intensity N₂, lots of G's and HEK's, quite a bit of LCWN's as high phase. Very "high" N in general anyhow. The ♂ obviously more aggressive than ♀; she was obviously alarmed, and assumed the anx. V quite frequently.

The ♂ sometimes attacked ♀ A immediately after a

new brief N, but he usually went to a "station" or potential nest-site to choose.

I should explain that these birds always landed in one of two areas, each with its own "station" or potential nest-site. There seemed to be equally favored, and I couldn't determine why they picked one of the "territories" at one time and the other at another time.

When the ♂ got to the "station" or nest-site (actually it was more probably the latter than the former — as it was in the bushes) he immediately began VCh. The ♀ followed him and stood close beside him. She might do a little N (or possibly SCh) but she was obviously very alarmed in this situation. The ♂'s Ch gradually subdivided into SCh in some cases, and this might be followed by more mutual N and then more VCh-SCh by the ♂. In any case, this display always ended by the ♂ attacking ♀ A. This attack was almost always launched from Ch, and the ♂ often uttered SCW as he dashed toward the ♀.

The ♀ always flew immediately, of course. The male usually followed her immediately, but sometimes he waited a while.

Sometimes the ♂ landed by himself alone. Then he just stood on the "territory" looking alert. Sometimes he flew off on a brief circular flight, to return immediately. When ♀ A flew in to land beside him, he immediately responded by VCh before she touched down. Otherwise he generally ignored flying birds, although he did sometimes give brief LCWN's to some birds flying by (including both Brown and Black Noddies).

When the ♀ A came in to join ♂ A already on the ground, the sequence of mutual displays was much the same as when they landed together — except for the fact that the ♂ began by VCh-SCh.

When ♀ B landed at the same time as the other two birds, she usually hung back reluctantly, in the amb. V posture, while the A's displayed together.

Once or twice, after the σ had attacked ϕ A, he walked over to ϕ B and then did some single intensity "buge" neutral N. This always ended in the σ attacking the ϕ B, without preliminary Ch, but giving SCW as he charged.

There are several other aspects of the behavior of these birds during their flights which may be mentioned here.

The σ several times seemed to stop in mid-air, and gave a loud and fairly long burst of SCW, with wing-beats intermediate between those of normal flight and the jerky flight during the first phase of the High Flight. Without any tendency to rise, however.

One of the most surprising things about this whole performance, in fact, was the complete absence of High Flights.

It is my impression that the σ was more often the pursuer than the pursued during this flying back and forth (which I shall call WF - for Wandering Flight) even when the birds had been flying for quite a long time (of course, he was almost always the pursuer at the beginning of a WF, just because the flights were usually begun by his trying to attack a ϕ).

When the σ and female(s) landed together, it was the σ who usually landed first, even when he was the pursuer. Thus, it looked as if his pursuing was "attractive" by itself. The σ pursued, turned, landed; and the ϕ (s) turned and followed him.

It was fairly obvious, I think, that σ A and ϕ A were slightly mated - while ϕ B was trying to join up with σ A.

This whole process was surprising & reminiscent of gulls; and was also comparable to the pursued pairing attempts I saw in the communal areas on Moto (Moi).

S

I should add that the σ appeared to be consider

ably larger than either of the ♀'s.

I got a very good view of the Choking during the MC's, and I can add a little to my previous notes. The sound itself is quite like the ch. of gulls. The ♂ also did a lot of side-to-side movements which were obviously sideways nest-building intention or low intensity movements. But without any sign of piling up material. Some (at least) of the V ch was given with the bill absolutely closed.

There were two definite Rattles during these MC's (almost certainly by the ♂). One in a more or less L posture. One apparently in a Ch. posture.

stolidus, I

Wednesday,
Mar. 21, 1957

I went to look at the little colony on Sand Island here today, to see if they were showing any pairing behavior like that of the birds on Eastern Island yesterday. In general, they were not — with the exception of a single pair. This pair showed behavior like that of the A's yesterday, but they were probably slightly more advanced in the breeding cycle. Less and shorter WT, both birds did Vch-Sch as well as N during the MC's, and the ♂ did not actually attack the ♀.

One thing I did notice about these birds was the fact that their SCW notes (which usually seemed remarkably common after watching Black Noddies) were really quite slow and long (compared with Glik or CR).

The SCW notes and SCWN's may also be slightly syllabic and have a rattle undertone, but always much less so than the typical Black Noddy notes.

about 10.

Midway,
Mar 21, 1957

I have been paying more attention to these birds recently.

Some of the most interesting observations recorded by the ♂ pursuing the ♀, all the way down to the ♂ getting the ♀ after mounting.

After seeing the Brown Noddies yesterday, I rather think that a lot of the small parties of Fairy Terns flying about in the colony area may be indulging in W.F.'s.

The "L.C." type of P.C. by perched birds (and landing birds) is usually like this — I think.

about 10.

Midway,
Mar 22, 1957

Watching the birds on Eastern Island.

One thing I forgot to stress in my account of pairing in the A's the day before yesterday is that there were definite signs that the pairing was becoming successful as the morning continued. The ♂ allowed the ♀ to stay longer & longer before attacking her, and she was beginning to relax a little.

By this morning the pairing seems to be accomplished. The two A's are established in the same place. The B ♀ has either gone, or, at least, is no longer interested in ♂ A. (There are a few birds in a communal area nearby, and ♀ B may be in this group).

The behavior of the A's has changed considerably. Very little W.F. A few circular flights by one (small ♂) or both birds.

The MC's when one or both birds land are often brief, but still rather high-intensity N.

There is lots more Ch. by both birds, both after the 1st MC and at other times. Once this mutual Ch. develops into begging by the ♀, and the ♂ regurgitates and feeds her twice.

The ♂ also makes two collecting trips, bringing back a little n.m. each time, which he drops at the nest-site in front of the ♀ who is first standing there. But this "n.b." is not developed and does not develop into anything more.

All in all there is quite a surprising large change from the day before yesterday.

When some clouds cover the sun, it gets much cooler, at 10:40 a.m. approximately, and everything becomes much livelier for a few minutes.

First of all, there is a sudden outburst of WF's; other birds suddenly appear & start flying back & forth. The A's generally ignore them as long as they remain in the air, (although the ♂ A means LCWN's and/or SCW when the flying birds get too close).

Several of the pairs in the WF flocks land from time to time. Each pair seems to have picked out its own territory or pre-territory, to which it returns whenever it lands.

The behavior of two of these new pairs upon landing is much as expected. Long series of mutual N and parading around in L. No Ch., and no actual attacks by the ♂'s on the ♀'s.

There is considerable disputing (mostly N, LCWN's, and SCW) between neighboring pairs on the ground. Some birds (including ♀ B?) land near the A's, which sends ♂ A into a fury. He eventually attacks them, chasing them off one by one. After this he returns to ♀ A, and their mutual displaying (primarily N) becomes longer. Then ♂ A begins to mean SCW,

and the σ on the right. The σ follows her closely.
(It is possible that any of the σ 's was attacking, but this app-
ears to be probably misleading.)

During the time when the intense hostility between males
was one of the main features, I still in posture came in
Bell about 100 ft. I think it was very much
like the σ of the Black Noddy, and
I think that it was also be homologous.

I shall call it a "growl" or "roar". The only
morphological difference between this pattern
and the CR of the Black Noddy, that I
could detect, is the greater "smoothness" of the Brown
Noddy pattern, the individual "syllables" or "vibrations" are
somewhat less distinct. The circumstances of this CR would
certainly suggest that it is high intensity and purely hostile
(the performing bird did not have a mate nearby).

σ A is still doing considerably more Ch. than the σ

There is no doubt but that many of the WF's are started
by a single bird or pair on its territory or pre-territory flying
to attack intruder(s). Obviously largely or purely hostile.
Even when the A's begin a little WF of their own when they
are alone, it is always or almost always begun by the σ
screaming SCW on the ground (and continuing for a little
while after flying up). Either the σ or the σ may fly up
first.

I have still seen no trace of High Flighting associated
with the WF's. (I haven't seen any High Flights at all on
this island). This is still surprising, particularly as the
WF's today have included lots of SCW (rather fewer LCWN's)

Albus
Albus

This morning I have been trying to see if there is any pair formation behavior going on in the group. I doubt it. There is probably a lot of early pairing, but the whole sequence seems to be so simple and so variable in minor details, and the birds are so difficult to follow among the trees, that it is difficult to describe adequately.

Still -- the whole thing is probably quite comparable to the corresponding process in the Black and Brown Noddies and the gulls. Most of the early pairs seem to have picked out quite definite territories, to which they return at least periodically, time after time, day after day.

Both individual birds and pairs make some of the same flights, some of which develop into WT's. (A lot of the WT's, like many of those of the other Noddies, are set off by hostility. In the case of this species, almost always an attempt by an intruder to settle too near the territory of the owners.)

Some birds, however, seem to be in the "mobile" pairing stage, settling in a whole series of different sites, but otherwise behaving just like the owners of more fixed territories.

The usual M.C. whenever one bird of a pair joins the other on the ground or perch, or they both land together, is still P.C. -- M.P.C. -- Gort(s). This is usually followed by the "invitation to preen" (either a Gort or head-forward posture with back feathers usually very ruffled) and mutual preening. (One bird, during its Gort during M.C. kept switching its tail back and forth in what appeared to be copulatory movements.)

I have seen no trace of fish-carrying, begging, or the feeding of the ♀ by the ♂.

I have seen several single birds fly from place to place, landing beside a series of solitary birds and/or pairs. Such visitors are always greeted by the usual P.C. (and sometimes Gorts), to which they respond in kind before flying away almost immediately. This sort of visiting may be connected

allus, Mar. 23, 1957, II,

(437)

with the same intention. It would be extremely difficult to
pursue the other birds.

The two birds were flying, the one was going some
distance and then came back. The other was in the
middle of the flight. I would also like to see the
in the middle of the flight. I would like to see the
the early phase of the display.

Some of the birds were in pairs, but ap-
parently not all. Some were in pairs by the pursuers.

allus, I

Midway,
Mar. 24, 1957

I have been looking for pair-formation again — with
the same results as yesterday. Actually, I shouldn't be surpri-
sed if it were going on all the time under any more, but it is
very difficult to see down.

There are only one or two minor details of the WF's which
might be worth stressing. The bursts of P.C. tend to come when
the pursuer(s) swoop or accelerate toward the pursued.
There is constant reversal of roles. And I have seen several
bird join several different WF flocks or pairs one right
after the other.

Another M.C. with "Tail-wagging" (which I shall call
TW). One bird joins its mate on a branch. Mutual P.C. —
MOC — Gort. The newcomer then stands in Gort and (with
wings folded and tail held at normal angle) switches its
tail waggers regularly from side to side. This again looked
very much like the movements made by ♂'s just before lower-
ing the tail to achieve contact of cloacas during copulations.
but I suppose that it might also be connected or derived

from a comfort movement (although I don't recall the whole performance is so conspicuous and peculiar - that I think it must be ritualized.

One thing I should add about the TW; it is rather slow much slower than the ordinary comfort shake tail wagging, just about the same speed as the copulatory wags.


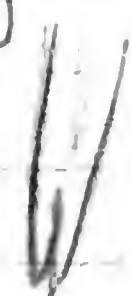
allus. I.

W. L. L. L.
March 20, 1959

Three cases of water redirecting P.C. upon one another during disputes with neighbors.

One solitary bird on branch near the pond. It was facing a pair trying to land nearby. It was in a normal sitting posture. It was raised a beat with each note or pair of notes. (This is just like the P.C. movements but each raising & beating of the wings was rather short - in time - shorter than the usual P.C. movements). This is the first time I have heard the B during an intra-specific dispute.

Perfectly high intensity & prolonged P.C. can be given without any wing-raising at all, but this is very rare.

Another case of TW, again with the Gait of NC. Got a good front view of this. The tail was not spread. Part of the time it was partly folded (as usual, I think, when birds are sitting) comme ça  The rest of the time it was completely folded  comme ça

Have now seen many more cases of water redirecting P.C. provoked by neighbor or stranger upon one another.

Friday
March 4, 1957

I went down to the little group in the
Lands Island. When I got there there were a few
adults to my surprise. They were mostly paired
behaviors. I think of the adult as being to interpret, as it
was all so quiet and I didn't see any fight.

The general layout of the birds in the area was
roughly like this



★ - Stations of
♂'s or pairs in
the communal area

● = Stations or
potential nest-
sites of ♂'s or pairs
under the Scrub.

Communal area
(concrete)

There were about 10 birds involved in the little
sub-group I was watching particularly, and about 20
others in the general neighborhood. Almost all adults.

There was some pairing like the pairing I have
described before going on in the edge of the Scrub and
other vegetation. Territorial, WF's, MC's, etc.

Some other pairing was slightly different and
somewhat more interesting. The main activities of this
group was about as follows.

Two birds would come together in the communal
area (after one or both had just come in and landed).
Lots of circular parading and N. (the usual MC. N —
silent except for some LCWN's as the up-phase).
Very high intensity, often prolonged, sometimes leading
to attacking of ♂ by ♀ (see below).

It was obvious that some ♂'s (or pairs — as

one of them σ 's had a q more or less closely attached; had preferred stations within the communal area, which they defended and returned to again & again.

The MC's & circular parading in the communal area were interspersed with long & elaborate WF's. Sometimes started when σ attacked q ; sometimes when one or both birds flew off without attack. There is no doubt at all but that the "core" of a WF group is always a pair or a potential pair. Any other birds are purely accessory; or the group is the result of the fusion of two or more discrete smaller groups.

There was nothing really new about this behavior; but, sooner or later, (in the case of at least two σ 's), after a burst of N and circular parading in the communal area, the σ would walk or fly to the edge of the far trees bushes, where he was immediately joined by the q , and where he might begin Ch. The site chosen in the edge of the Seabees was presumably a potential nest-site. It was certainly part of a territory defended by the σ . But it might be quite far from his territory. In the "Communal area" Once the pair had reached this potential nest-site, their behavior was much the same as that of the A's I watched on Eastern Island.

This sequence might suggest that the initial stage of pairing is mutual hostility in the communal area; after which the σ leads the q to a potential nest-site (which he selects at the time, or perhaps, has selected much earlier) where they go through more mutual hostility.

It must be stressed that there was a really fantastic amount of general hostility in the communal area most of the time. Everybody was threatening everybody else almost constantly. Fight after fight (it was apparent, incidentally, that σ 's were somewhat more aggressive than q 's on the whole), often leading to vigorous aerial pursuits (sometimes with fights) often being connected with, or leading into, WF's. The whole thing was

stolidus, Mar. 25, 1957, III

(441)

complete generalization and confusion — and it was unbelievable difficult to follow changes in birds for more than a few seconds. The birds in the area were moving about as quickly as anything I saw in the communal areas. The birds were displaying greater than any I had seen in the communal areas of any species. The birds were displaying hostile excitement was really the only description of behavior that almost all the birds were at least thinking of. — as all the individual displays were hostile.

This general hostility in the area included a great deal of CR, SCW, and LCVN's, as well as the N complex patterns, which differentiated it from the hostility between potential mates when more "definite" pairing has begun.

It might suggest, however, that the very first stage of pair formation is generalized hostility of this sort, in the midst of which the ♂'s and ♀'s began to sort themselves out (presumably in the usual way, i.e. selective response of individual bird sexually motivated ♀'s, etc. etc.). It may be that the first real MC. reactions only occur after this.

The first stage of MC-ing is certainly N alone (with L-parading, occasional LCVN's as up-phases, etc.). with the ♂ usually attacking the ♀ (usually with SCW at the beginning of the actual attack, or, less frequently CR or LCVN's) at the end of the mutual N. This is followed by the stage in which the ♂ Chokes before attacking the ♀. Then the ♂ Chokes without attacking the ♀. Later on the ♂ (and possibly the ♀) begins to collect n.m., and the ♀ begins to Choke also. It seems to be only after this that mutual preening and other sexual patterns develop.

I must admit that most of the birds I watched today seemed to have already developed the very weakest pair-bonds. The ♂ and ♀ only did prolonged

M.C.'s with each other. But I certainly did see both ♂'s and ♀'s N at other birds. In particular, it was obvious that the mere sight of pair W - viz. leaping and vigorous at one another was sufficient to attract other birds (apparently ♀, like B) to approach and N a little themselves, in an apparent attempt to "horn in" on the M.C. between the pair.

There was only one ♂ who was obviously quite unmated. He spent most of his time, (aside from the periods spent in little circular flights, and attempts to join in WF's) standing on his station in the "communal area" (rather to one side). Whenever a bird came in to join him, he gave only brief N's and then attacked the intruder. These attacks often led to prolonged WF's (with many SCW and LCWN's).

This ♂ was also particularly prone to fly up and chase unoffensive flying parrots. These pursuits did not often lead to long WF's; but, in one case at least, the ♂ was obviously trying to fly in front of his "quarry". This might suggest that aerial pursuits (with or without previous encounters on the ground), with attempts to "lure" the "pursued" bird down to the ground, may also play a very important role in the initial stages of pair-formation. (The attempts of this ♂ to follow & join WF's may also be significant in this context.)

One of the reasons that I think the initial stages of pair-formation must be something like either one or both of the suggestions noted above (i.e. on the ground, in "communal areas", or aerial) is that I haven't been able to identify any definite G.C. This male and other birds often gave vigorous CR's, SCW's, and/or LCWN's toward flying birds; but they also often ignored flying birds. The general impression I gathered was that these displays were purely hostile, less automatic or standardized in sequence than most G.C.'s of other species.

Of course, I suppose it is also possible that un-

stolidus, Mar. 23, 1957, V

(443)

mated but some unmated birds (primarily males) ♀s gave a call that I took for apparent solitary birds and I was sure that the latter were of the same species as the former.

On the same day, during the same period of flights, pursuit flights and other activity, was the very quiet frequency of SCW and SCWN's (and possibly also CR — see below).

I am fairly sure, incidentally, that all or most of the birds I watched tonight were part of the group that first finished breeding a month or so ago. Many of them are missing wings and (particularly) tail feathers, presumably undergoing the post-breeding molt. And one of the birds was followed by a juvenile who FB'd almost constantly. This adult did not feed the juvenile; but (unlike all the other adults in the group) it didn't attack the juv. either (it just took evasive action from time to time. This is really quite remarkable).

It should be noted that whenever this or another juv. approached the group there was a particularly noisy outburst of CR, SCW, and SCWN's. The adults seemed to find the sight of a juvenile particularly infuriating.

A long SCW was almost invariably given by all birds flying up in any circumstances, to go out to sea to feed as well as when beginning or joining a pursuit flight or WF, etc. The usual call by landing birds was a series of SCWN's, but SCW's were also given (or given instead) by some landing birds in some circumstances.

The general hostility included a lot of CR's, many more than I can ever remember at Easter Island (except, perhaps, when I watched the little fighting parties on top of the cliffs the day I arrived the first year). I got love-

by views of lots of them. Much as described before. *Y* ... a def-
 inite *O* or semi-*U*-semi-*O* posture. Obviously much host-
 ility. Obviously high-intensity. Many cases of CR following into SCW,
 and some cases of CR following through SCW into LSCW's!
 Obviously quite aggressive, given by birds advancing toward
 their opponents. But possibly less aggressive than some SCW;
 less frequently given by birds flying to attack immediately.
 Could be directed toward flying birds as well as birds on ground.
 Possibly uttered by flying birds as well, but I am not sure
 about this.

These CR's were really remarkably common. About as
 frequent as they are in the Black Noddy colony now. But this
 does not invalidate the hypothesis that the CR of the Brown
 Noddy is higher intensity, on the average. These birds were
 obviously much more excited than most of the Black Noddies now.

It is only or usually the lower intensity SCW notes that
 are slightly bryllabic. Thus, the SCW of this species shows a
 slight division into LSCW and RSCW.

In view of the frequency of all sorts of hostile aerial patterns
 in the group, it would seem to be very significant that
 High flights were very rare. I only saw one brief and in-
 complete High flight, which developed out of an ordinary
 WF (or other pursuit flight).

The only morphological distinction between the WF and
 other hostile pursuit flights is the fact that many WF's go on
 so long without any real attempt by the pursuer to "close
 in" and actually attack. WF's are also somewhat slower,
 on the average (with many exceptions). There is no doubt
 but that the WF's are just a type of hostile pursuit flight.

Herdman
March 17, 1957

A lot of birds here, in fact, in same area as the Brown Booby. Apparently more advanced than the latter — on the average. I suspect it is so that he has seen a lot of young.

By far the most common display of this bird, flying in the air as well as perched in trees, is the LCWN. Essentially similar to that of the Brown Noddy but unmistakable. Has a very pronounced "rattle undertone" — so much so that it often sounds like a pure rattle (but it probably should not be confused with the R of stolidus). Single notes or a series just like the LCWN's of the Brown Noddy. When given by a bird on the ground or birds perched in trees, it is accompanied by the same O and bill movements as the LCWN of the Brown Noddy. Tongue often raised comme ça

The inside of the mouth and the tongue are the same orange-pink as those of the Brown Noddy.

The almost flying young have been doing a lot of FB. From usual HVH accompanied by soft shrill piping or whistling FB notes, (bill opening & closing) in gull-like rhythm.

This species also seems to have an SCW pattern, but I haven't been able to study it well yet. A few notes like rapid brief LCWN's preceding the real LCWN's. Same tone & rattle-like quality. Sometimes SCW-LCWN's given by landing birds as a sort of Landing Call.

Sometimes, but not always, the LCWN's are almost syllabic. Almost "tik-Baaaaah"
rrrrrrrr

The LCWN is also the usual reaction by a perched bird to a flying bird coming too close.

This species does have a sort of Nodding complex. I have seen V's, U's & G's, Gorts & Isb's. but usually single. I haven't yet seen anything like a real repeated up-and-down performance. And none of these patterns have been very common.

The tongue-raising in G is just as in the Brown Noddy.

This species may have a ^{pure} Rattle, but difficult to tell. I have heard a lot of "tuka-tuka-tuka-tuka-tuka..." notes, very long and mechanical sounding, but these might have been nothing more than perched LCWN's or (barely possibly) very rapid SCW. By flying birds, and some by a perched bird in semi-O - semi-V Posture.

I have seen two definite cases of ritualized High Flight. Fast rising jerky flight with SCW, circling in Butterfly flight by one bird at top, and descending glides. Quite as in Brown Noddy.

I have heard some birds (some of which were definitely juvenile and the others which were doubtful) give perched LCWN's. Without the rattle undertone. Very nasal "anti" quality. Very reminiscent of the Inca Tern. This quality is probably present in all the LCWN's but usually masked by the rattle undertone.

tinamorphus, I

Midway,
March 18, 1957

The LCWN is the call given by birds flying toward me, also by birds flying up in pairs from a communal resting and preening area, also by perched birds or birds on ground toward flying birds.

The temnirostris was seen on the ground like that of the temnirostris. Some of the movements, but it seems to be relatively rare, although this effect might possibly be due to the circumstances here.

I have now seen two cases of real prolonged repeated N. Possibly by the same bird. First was fast or vigorous. Rather a "low" type, alternating V or U & G with G or G & G.



There was one HFK during this N.

These birds also have the usual alarm posture.

Another long complex N performance during territorial dispute (almost certainly by a different bird). Quite vigorous, but again very "low". Repeated alternations of G or G & G.



Moderate low phase



Extreme high phase (some of the U & G's weren't even as high as this)

Some of the jerky rising flights at the beginning of the High Flight appear to be absolutely silent.

The young birds also utter the "FB" notes, from a more or less unritualized LCN or pre-attack posture, and also when picked up by me.

Guillemot
Mar 18, 1957

There is a small colony of these birds here (very far away from the Black Noddies) whose young have just fledged a few weeks ago (according to C. R.) We went down to take a look at them and over disturbing them apparently set one pair off on a complete and prolonged High Flight performance, just as in Easter Island.

temerastus, I.

Midway,
Mar. 19, 1957

Have seen another to a burst of it during territorial dispute. Obviously lower intensity than the others. No G. Long alternation of U and Gost. Interestingly enough, this N was less "low" than the others I have seen, & the U was quite extreme.

A burst of the Rattle by a bird sitting on nest when a neighbor lands too close by. "Tuka tuka tuka tuka..." In slightly O-like U. Bill opening very slightly & closing in rhythm with call. Almost a vibration.

SCW before attack.

As far as I can tell, the usual MC at this stage is N, of the rather non-aggressive type, i.e. relatively little G. This MC N is also less "low" than some of the N between neighbors and strangers, which would suggest that "lowness" is also an indication of aggressiveness. (Some of the MC N's are preceded by LCWN's or SCW-LCWN's by the landing bird as it comes in to land. All very nice from a comparative point of view.)

The lowest intensity form of N - as expected - seems to be single or repeated Gosts.

temuortus, Mar 19, 1957, II

(449)

I am now a little bit SCW and related call
problem. I am still very much confused to see in the trees
the birds that are giving the SCW at the present time
are given by the flying birds. I am still very confused
about this.

There can now be a small SCW short notes,
slower than Glee, or a small SCW, preceding LCWN's.
Might be transcribed as "tut-tut-tut" similar to
LCWN's in quality, but with a rather undertone. I shall
continue to call these SCW for the time being. This may be
given by perched birds, but I am only sure that it is given
by flying and landing birds.

The sequence SCW - LCWN's in this species is quite reminis-
cent of a complete L.C. Much more so than in the Brown
Noddy.

This species also has the harsh call which I have termed
the Rattle on earlier pages. I am beginning to think that this
is not a complete homologue of what I called the Rattle in
the Brown Noddy. It may be more closely related to the
"Tut-tut-tut" or "Gallop" of the Brown Noddy.
It might even be the real SCW of this species — and what
I am calling SCW might be intermediate between this call
(which I shall term CR) and the LCWN. In any case, the
CR of this species is much commoner than the Rattle of the
Brown Noddy.

temuortus, I.

Midway,
Mar. 20, 1957

I have now just heard a definite burst of SCW, followed
by LCWN's, by a perched bird (although I didn't see the
posture accompanying the SCW).

I have also seen a long CR given by an incubating bird
from an ordinary incubating posture. (Might possibly be called a
weak V, but certainly nothing more)

Now I have just had a beautiful view of the CR by far the best I have ever had.

Bird sitting on nest when another adult lands nearby. The sitting bird just stretches neck forward (toward the newcomer) and slightly upward, and gives a long burst of CR. Bill opening & closing slightly in rhythm with call. The newcomer begins N. The sitting bird responds by some N of its own. The CR continues during part of this N. but softer than usual, bill hardly opening at all. Then the sitting bird gets up, obviously in preparation to attack the newcomer. But the latter flies off immediately. The sitting bird then gives one LSCW and settles back.

I think that the call I have been terming SCW in this species had better be termed LSCW.

It is now becoming obvious that the LSCW - CR complex of this species is both homologous and analogous with the SCW - Glik complex of the Brown Noddy. But it is the CR which takes the place of the common SCW of the Brown Noddy, although in form it appears to be more strictly homologous with the Glik. A nice shift of thresholds.

A burst of CR by one or both birds during an aerial fight.

Another burst of CR by one or both birds during a fight in the trees.

I must stress the fact, in case it isn't clear in the preceding pages, that LSCW of this species seems to be actually as well as relatively rarer than the SCW of the Brown Noddy.

The head shape in the V and N is a sort of "egg". Very smooth in front (forehead much flatter than in normal relaxed postures), long, and rounded to the rear.

temminckii, Mar 20, 1957, III

(450)



Egg shape

temminckii, I.

Hedway,
Mar 21, 1957

Two birds were seen in the night around mid-
night. I could hear them from my room. I heard
a lot of definite and prolonged SCW, before LCWN's. Also
a few CR's before LCWN's.

I have now just seen a sitting bird give a prolonged
CR, followed by several LCWN's, at an intruder. From a
good O posture. (The intruder was above the sitting bird)

CR - LCWN's given as Landing Call

The relationship between the CR of this species and the
SCW of the Brown Noddy would thus seem to be established be-
yond doubt.

Watching a pair that definitely don't have a nest yet.
One bird sitting on branch. Mate flies in carrying n.m. Long
M.C. of mutual N. Quite high. A number of U's with bill
open in G, without tongue-raising. Then one bird starts
to preen the other, just as in Brown Noddy.

There was also a little "billing" during the N, which
might have been either begging or preening intention movements.

The bringing of n.m. is a usual feature of nest relief,
just as in all other species.

Have been watching the pair, noted above, in which social
preening occurred. Have seen more social preening just as before
(but no sign of reversibility yet). The general behavior of
these two birds may be typical of the later stages of pairing.

They sit side by side on their branch, with mouths a little open or closed, then one or both fly off, back a little, M.C. off, back again, etc. The interesting thing is that all of a sudden these little flights are n.m. - collecting expeditions. I have seen them "trying out" n.m. on the ground, and at least one of them brings back n.m. when it joins its mate on the branch. But this material is just dropped, on the ground and on the branch both. There is absolutely no trace of a nest on the branch.

I have seen several more U & G's without tongue-raising. During a dispute between neighbors. This seems to be one of the peculiarities of this species. I think that the U & G's without tongue-raising are probably lower intensity than those with raising.

The resemblance between the CR of this species and the CR of quills is further shown by the fact that the CR can be given from a variety of U- and O-like Postures. Not as ritualized as the O of the ECWN's.

There is one implication of the rarity of mutual preening in this colony now which deserves to be stressed. The only pair I have seen do this is in the pre-incubation phase. I haven't seen any of the birds in the incubation or post-incubation phases do any mutual pr. at all. A further indication of the sexual nature of the pattern.

I can add a few more details about the general state of this colony at the present time. Lots of young are flying and have lost all connection with their parents. Lots of young are just fledging. There are still quite a few birds incubating. And there are very few indeed in the sexual phase. (And these latter may be re-mating).

A few more notes about Cawing, which may, perhaps, slightly clarify some of my earlier remarks.

The ... rapid Kruh Kruh Kruh Kruh ... "SCW" I have ... have been given by landing birds. There is to follow ... later ... you ... the ... of the landing ... (see ...)

Landing ...
Black Noddy

I am not sure that I have been showing the correct distinction between LSCW and SCW as given by the birds perched in trees. Some rapid moderate length notes given from I (with bill opening & closing) are probably LSCW instead of SCW as I have been classifying them. (See also today's notes on the Brown Noddy). Each of these LSCW notes may also be slightly syllabic, and have a rattle undertone.

Will - speak of the devil - no sooner said than done. I have been watching a pair showing moderately early pairing behavior who had a series of disputes with neighbors. Several bursts of calling occurred during these disputes, and I noticed the following:

A burst of rapid notes quite as rapid as the ones often given by landing birds. Might be better transcribed as "Kruh Kruh Kruh Kruh Kruh..." (I think that I will use the term "RSCW" for this call when given by birds on ground or perched on trees as well as when landing). Given from a rather weak O posture (like the posture from which many CR's are given) with bill opening & closing in rhythm, (but bill only opening a very little, hardly more than during CR's).

I can confirm the fact that this RSCW is intermediate between the LSCW and the CR.

The series LCWN - LSCW - RSCW - CR is almost a continuum.

One of these pairing birds also uttered a lot of LSCW notes. The bill opened & closed during these notes just as in the SCW of the Brown Noddy, i.e. quite widely. They were given

on from a rather short-necked O. P. ... and the
appeared to be thrown back (almost to the vertical) with
each note.

This pair kept flying from branch to branch within a
fairly wide area, giving a new M.C. (large, N. vocal) when
ever they landed in a new place. One or both birds also made
little circular flights from time to time, followed by more
M.C.'s, etc. All quite reminiscent of the "mobile" pairing
of gulls.

I think that some of the LCWN's given by flying birds
are longer than any of those given by perched birds or birds on
ground.

LSCW, RSCW, and CR are often given by birds flying up.
I think that LCWN's may also be given.

Have just been watching more LSCW by perched birds.
Just as before. As in the SCW of the Brown Noddy, it is the
lower note that moves up and down. (This is probably
what gives the impression of a throw-back with each note.
The head is probably quite steady throughout in most cases.)

CR before attack. Again & Again Also during aerial fights.

The usual Landing Call CR or RSCW — LSCW is quite
distinct from the usual series of the same notes by perched birds
insofar as it is longer, containing many more notes.

If these LSCW are really the equivalent homologues of the
SCW of the Brown Noddy, then the SCW of this species is not
particularly relatively rare.

But this leaves me with another problem. I haven't
heard any really long notes given by perched birds today,

temminckii, Mar 21, 1957, I.

(455)

It was in a new place the usual sound. Although there have been a number of notes - low, low - like notes, (perhaps during the up-pitches of 18, from more extreme than usual with the (18) so perhaps it is the non-usual sound of the species which is relatively rare here in the Brown Noddy. I don't think this. Although it is possible not too important. (perhaps a matter of my remembering - as the distinction between all these calls is so blurred.)

The usual sound is a short closed bill

The usual sound is more often monosyllabic than the SCW notes.

One thought has struck me while watching the mutual preening of these birds. One of the birds interrupted its preening of its mate in order to make a few quick preening movements toward its own flanks and back. This sort of thing is also common in the Brown Noddy and the Laysan Tern, of course. I wonder if such "switch-overs" can not be ascribed to "feed-back" mechanisms in much the same way as the extensive feeding and drinking of Belcher's Gulls?

temminckii, I

Midway,
Mar. 22, 1957.

The two pairs which I watched pairing yesterday have just begun a little n.b. Much as usual. One bird brings its back to its mate.

When the mate takes this n.b., it pecks at its mate's bill in what looks almost like preening.

I forgot to say yesterday that some of the preening of one bird by the other also involved a little "bill-pecking" or preening at

birds, which also looked as if it might be a young bird.

I have now heard a few more of the LSCW notes. They are as long or almost as long as the usual LSCW note. It is obvious, however, that the distinction between non-aerial LSCW's and LSCW notes is purely arbitrary or conventional in this species, (although I shall try to maintain the distinction in my note-taking).

The LSCW's of adults during the up-phase of N are now what different from the ordinary LSCW's or LSCW's in any circumstances. Look to the latter undisturbed. Just brief, hoarse, and rather nasal. (I think it is less nasal than some of the juvenile calls I have heard).

An adult attacks a half-grown young with many CR's and LSCW notes. The actual attack pulling movements are accompanied by "trembling" movements of the head & bill joint like the similar movements associated with the CR of the Brown Noddy.

I have now seen a good deal more "mobile" preening behavior like yesterday's.

Watching an adult feed a juvenile. The adult apparently quite silent.

Aerial posture by bird flying in to land with CR. Quite a definite O. With definite bend in the neck.



Notice very different proportions from Brown Noddy. Larger headed, shorter tailed.

Alcedo I

Midway,
March 20, 1957

Well! Well! Well! I have now seen dozens of definite, well-developed and extremely conspicuous High Flights in this species. It is as peculiar as usual too.

It seems to be divided into two phases, rising & descending. All the flights I saw involved only 2 birds.

The rising is accomplished by very fast, snappy wing-beats, quite like those of the other Troglodytes during the corresponding phase of their High Flights. (The fast snappy flight also occurs during some parts of some W's and the present flights, but usually only for very short periods - and without the rising component). All the cases I saw were too far away to determine if any call was uttered. The rise is accomplished by spiralling. The two birds usually fly close together and the spiral is usually very tight, no more than 20 or 30 feet in diameter in many cases (although there is considerable variation in this respect, even within the same flight, some of the circles being sometimes quite broad). All these High Flights went very high indeed, higher than any of the flights of the other Troglodytes I have watched, some of them even going so high that I couldn't follow them with my binoculars.

There doesn't seem to be any particular reaction when the birds have reached the top; they just stop rising and begin to descend.

The descent is also similar to the corresponding phase of other Troglodytes, but also has its own peculiarities. The birds first begin to glide downward, on a circular (or more frequently) zig-zag course, gently at first, more steeply later on. This gliding is frequently interrupted by short periods of flapping flight in some cases, usually when the direction of flight is about to be changed. This descent is never as steep as the most exaggerated descents of the other Troglodytes. Some of the descents are very gradual indeed.

teminortus, Mar. 22, 1957, III

(459)

So the flying birds are certainly going during much of the morning might be described a form of WF, but all the cases I have seen have been much less intense than the usual WF of the teminortus or the WF of the Brown Noddy the day before yesterday.

teminortus, I

Hudway,
Mar. 23, 1957.

One bird does lengthy N (Alternate V & Gait) with CR throughout. This may have been a case of pairing behavior, but I do not know. It was an awfully early phase.

My best view yet of a ♂ feeding an (incubating) ♀. Very close. Absolutely silent on the part of both birds. No trace of Ch.

Just about now at there is a burst of WF's (involving pairs, trios, and larger groups) just like those of the Brown Noddy & Fairy Tern. Very long.

The back feathers of young birds FB in the HH are fluffed and form a conspicuous "hump", but are not much ruffled.

teminortus, I

Hudway,
March 24, 1957

Watched a pair showing pairing MC behavior on the ground — the first time that I have seen this. Like the Brown Noddy, with one important difference — no circular parading in L. But the birds did circle around one another, in short little flights (usually about a half circle) about an inch off the ground. Lots of N in between these circular flights, the birds usually standing almost still during this N. There was no trace of ritualized L Posture at any time, or of any clicking.

There is lots more "mobile" pairing going on. I still see
 still no trace of High Flights in this situation

territories, I.

Wednesday,
 Mar 25, 1954.

Watching the same pairing pair I watched a couple
 of days ago. They don't seem to have made much progress in
 the interim. They have definitely picked out a potential nest
 site; to which one or both birds will bring n.m. from time
 to time; without, however, working it into a nest-cup.
 They also do a little "mobile" pairing at intervals.

The MC's are now nothing but N, alternate U & Gait,
 and relatively short. Still no trace of H.

Now the n.b. of this pair (call them X) is developing a
 little further. One of the birds, the ♀ I think, is trying to change
 the n.m. The ♂ is doing most of the collecting. All as usual.

There is no doubt now but that the CR is homologous
 with the Gk of gulls. It is certainly the characteristic display
 by incubating birds which are very annoyed by the intrusion
 of a stranger.

I should add a few words about N. It is not always as
 "low" as the N I first saw (this latter was probably particu-
 larly aggressive). Most of the MC N's, and some of the N's
 during purely hostile territorial disputes are alternations of quite
 "standard" U's & Gait. But G is definitely relatively rare,
 HFK's are very rare indeed, and I still haven't seen any ft

After having watched these birds off and on for quite
 a while now I am beginning to think that the Black
 Noddy may be partly intermediate between the Brown
 Noddy and the Fairy Tern, showing an initial stage of the
 simplification of behavior which is so characteristic of the

latter species: apparent absence of holding, simplification of N. etc.

stolidus, II

Medway,
March 26, 1957

I went down to look at the birds at the pond this evening - the same time as yesterday. There were very few birds and these I noticed about the same things!!

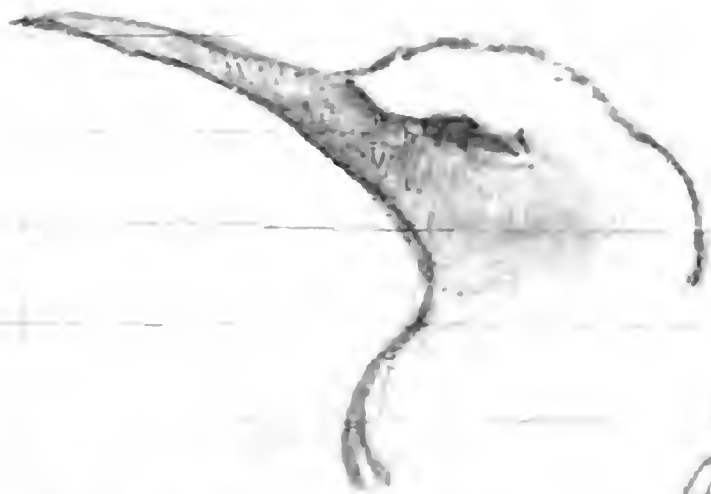
Which certainly shows the jawing at the stage comes in spurts. (It's what it was in winter, I also note that the weather was cloudy with some wind yesterday, while this evening was absolutely clear & calm).

It is rather interesting that the birds often sit perched on bushes, while all their jawing behavior (and nesting) is on the ground (or flying of course).

temnostris, I

Medway,
March 27, 1956

Long mutual preening between ♂ and ♀ who don't have a nest yet. Begun by ♀, who usually preens chin & cheek of ♂. Actually, more preening done by ♂, who preens chin, cheek, crown, nape, & scapulars of ♀. The two birds alternate for quite a long while. All apparently quite silent. Then ♂ goes to collect n. m.; ♀ just flies away.



This is the head set of a bird being preened. Much the same as that of the preening bird also. I don't think that it is so much sexual as just non-hostile, lacking the sleekness which is characteristic of all the hostile patterns.

Watching a pair apparently engaged in real, intense,

(and apparently successful) nest-building. (I was not collecting while ♀ was on site. Blackbirds silent. In fact no trace of any hostile patterns at all.

More mutual preening, again with no trace of any hostility.

It seems to be obvious that by the time the pair has been formed, in these circumstances at least, the hostility between ♂ and ♀ has declined very greatly (more so than in most species).

stolidus, I

Midway,
Mar. 27, 1957

Back at the usual place on the hill again this evening. Clear but a little more wind than last night. Four birds here, but a little more active than last night.

The unmated ♂ who was here two nights ago (let us call him AA) is back at his station in the communal area. Then, when another bird flies fairly high overhead (at least 20 feet) he gives a burst of SCWN's. (Looked definitely like G.C.) The newcomer lands, presumably ♀. Mutual N as ME. AA walks over to his station in the Scavolo, ♀ follows. AA does what is either Sch or nm, ♀ just looks on. ♀ flies off. AA relaxes.

When AA is alone again he makes a lot of circular flights, usually with SCW, at the beginning at least. Whenever another bird flies near, he starts to chase it, in an apparent attempt to begin a WF. Once this chase appears to induce the other bird to land near AA's communal area station, but he just keeps circling low around & around the newcomer, and then lands some distance away and ignores the newcomer (I wonder if this latter night have been another ♂ who landed by mistake?).

stolidus, Mar 27, 1957, II

(463)

LCW. - ... birds are
"ground" ... actual
on ...

... quite about

stolidus, I

Midway,
March 27, 1957

Early this morning ... cloudy,
and I didn't see a single High Flight. Later in the morning,
after it had cleared but was still dead calm, I did notice
one High Flight, incidentally, in the course of other work.

There seems to be quite a lot of "mobile" pairing still
going on. Pairs flying from site to site, for a little brief dis-
play of the usual type (usually quite hostile, I think, without
the actual preening) at each place. Some of the sites they try
to occupy are in the territories of other birds, which often fly up
to repel the intrusion, thus starting quite a number of the
WF's.

I am now sure that copulations are somewhat commoner
in this species than in the other Moddies, although they are cer-
tainly rarer than in gulls. This is also presumably correlated with
the relatively great frequency of mutual preening in this species.

albus, I

Midway,
March 28, 1957

Possible pair-formation behavior? One bird repeatedly
tries to land beside another. Always repelled by PC. The
repeller also often flies up to chase the "friendly" bird, thus
leading to several WF's (in which the lead alternated from
time to time). Then the "friendly" bird tries to land beside a
third bird, also repelled. Then flies off, to join a WF, both as

chase and then pursued, with a whole group of birds.

There is no doubt but that many birds will get involved in numerous WF's, sometimes in one role and some times in the other, in rapid succession. Never seems to lead to much, however.

A WF flying by is immensely "attractive" to all sorts of birds, well-mated pairs as well as others (although less attractive to settled pairs involved in sexual behavior than pairs still M.C.-ing), who are always greatly tempted to join in.

Still more cases of apparent "uncoordinated" landing birds sexual others (and being grossed, or more frequently getting a purely hostile response), and getting involved in a whole series of WF's.

It is evident now, I think, that whenever one bird in a WF lands there is a strong tendency for the other(s) to land nearby, if only temporarily.

One bird (looks small like a ♀) keeps trying to land beside another (♂?). Each time the ♂ does it. Sometimes the ♀ just circles him, sometimes she lands some distance away. In any case, she soon flies up again. The ♂ occasionally flies up to chase her in a WF. This may last some time, and then WF may become mixed up in other WF's, but the 2 birds eventually return to their original area.

I have seen a few more semi-V-glides by birds giving PC's in air (particularly by birds on the reef that I watched yesterday).

Four birds of a WF land more or less together, with the usual confusion & disputing. Most of their displays were PC.

allus, June 28, 1957 III

(465)

but there was a lot of activity in the air, and some birds were flying high.

I have seen some High Flights today. The weather was calm & bright in the morning, but I did see quite a lot of activity. Some birds seemed to be inter-mixing between the ordinary flight and High Flight, and in some cases, flying out two birds (with one exception - a flight in which a third bird joined very briefly). The birds were flying higher, but with ordinary wing-beats. In some cases, they were more irregular, sometimes more irregular (with frequent stops, etc.). Going much higher than ordinary, but not much less so than the High Flights. Descending with irregular alternating periods of flapping flight and glides. Both rise and descent quite gradual, probably as much so as many High Flights.

stolidus, I.

Medway,
March 28, 1957.

There was a little, but very little, pairing going on in the group on this island this morning. Just as before. The only incidents of interest were several "G.C.'s" of LCWN's given by unmated ♂ AA toward flying birds which induced the latter to land beside him, and perform mutual N with him. (I should add that his usual display toward flying pairs was CR - with a few LCWN's thrown in from time to time - i.e. he was apparently "selecting" between different flying birds.)

albus, I.

Medway,
March 29, 1957.

One bird gives the usual P.C., and then throws its head up, in what looks rather like the O-movement accomp-

allens, Mar. 27, 1957

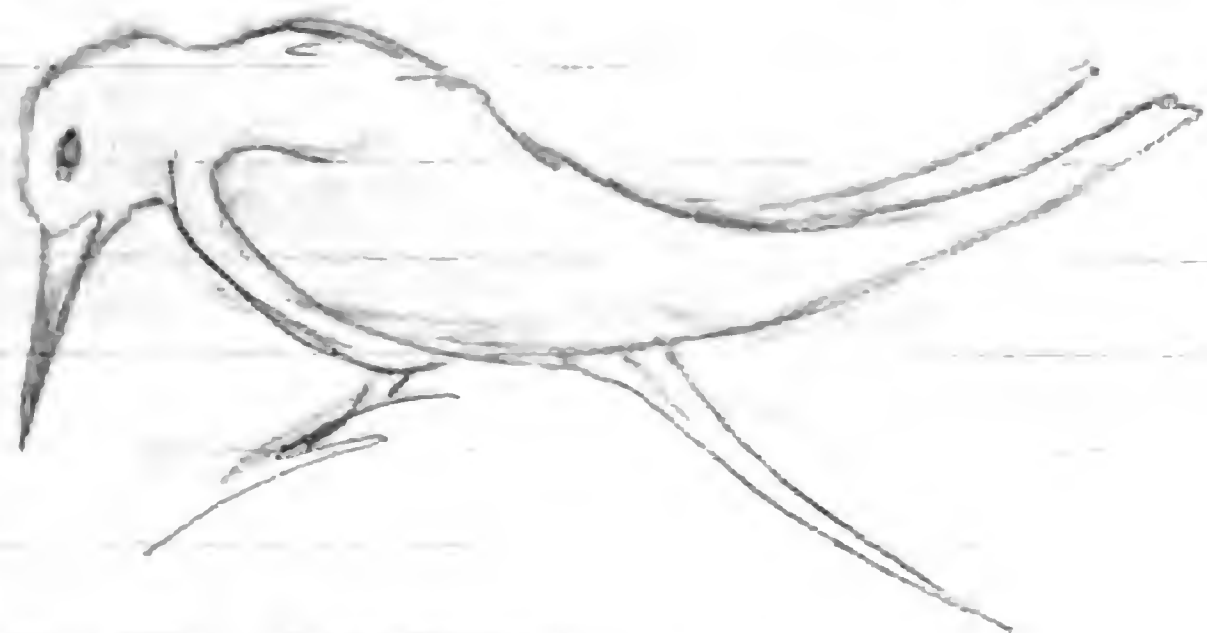
anyway SCW notes in the other Noddies, with the ~~to~~ note in the P.C., when its mate comes in to land. Probably accidental.

TW is certainly very rare. I haven't seen any for a long time.

The pink inside the mouth is occasionally moderately conspicuous during P.C.'s. Might be significant.

There does seem to be a tendency to nod the head & neck up and back (almost to the vertical) immediately after attack in the air. This might be a vestige of an ft. gaiter, or, perhaps more probable, a purely functional movement to get back on an even keel for further flight.

Now, of course, I have just seen another TW.



TW angle of wings and tail.

allens

Midway,
March 30, 1957.

Nothing more to add really.

I have seen no more High Flights the last two days. Just the very high WF's. This might suggest that the High Flights and at least some WF's are interchangeable — more or less dependent upon the weather — wind, temperature, etc. at least to a considerable extent.

NoddiesJohnston Island,
April 9, 1957

There are a lot of Brown Noddies here, and a few of both the Black and White ones. Not much doing, but I did see a few new to me.

The notes of the White Noddies here are somewhat different from the ones I heard on Midway. Many have a little high-pitched squeak undertone. And some seem to be pure squeaks without any buzz. The general arrangement of the notes, however, is the same as on Midway.

The Brown Noddies were pairing in the same way as on Midway.

It was noticeable that the Black Noddies, which were not breeding, gave lots of LCWN's when flying up when disturbed by me, while the Brown Noddies were usually silent in the same circumstances.